Goodwyn Alpha Facility Operations Environment Plan

Australian Operations

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1. INTRODUCTION

1.1 Overview

Woodside Energy Ltd. (Woodside), as titleholder under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) (referred to as the Environment Regulations), on behalf of the Joint Venture detailed in Section 1.6, is operator of the Goodwyn Alpha (GWA) facility. The GWA facility commenced operation in 1995. Well fluids are recovered from a series of fields via wells, pipelines and subsea infrastructure, which are processed by the GWA facility. The following activities are proposed to occur within Permit Area(s) WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L, WA-7-R[1], WA- 2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL and proposed Wilcox pipeline licence[2]:

- routine production
- routine inspection, monitoring, maintenance and repair (IMMR) of the platform and associated subsea infrastructure
- well clean-up and commissioning
- platform well intervention, workovers and well kill activities
- non-routine and unplanned activities and incidents associated with the above.

These activities will hereafter be collectively referred to as the Petroleum Activity and form the scope of this Environment Plan (EP). A detailed description of the activities is provided in Section 3.

This EP has been prepared as part of the requirements under the Environment Regulations, as administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

In accordance with the requirements of Regulation 41(1) of the Environment Regulations, Woodside has submitted a revision to the GWA Facility Operations EP to NOPSEMA at least 14 days prior to the end of the five-year period from the original acceptance under what is now Regulation 35 of the Environment Regulations. At the time of the original acceptance, the relevant provision was Regulation 11 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

In accordance with the requirements of Regulation 39(1) of the Environment Regulations, Woodside has revised the GWA Facility Operations EP to incorporate the start-up and operation of the Greater Western Flank-4 subsea infrastructure as a new stage.

1.2 Purpose of the Environment Plan

In accordance with the objectives of the Environment Regulations, the purpose of this EP is to demonstrate that:

- the potential environmental impacts and risks (planned [routine and non-routine) and unplanned [accidents, incidents, and emergency situations]) that may result from the Petroleum Activity are identified.
- appropriate management controls are implemented to reduce impacts and risks to a level that is ‘as low as reasonably practicable’ (ALARP) and acceptable.
- the Petroleum Activity is carried out in a manner consistent with the principles of ecologically sustainable development (ESD) (as defined in Section 3A of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cth) [EPBC Act]).

[1] At the time of EP submission, applications for two Petroleum Production Licences covering the WA-7-R (Wilcox) retention lease area are undergoing assessment by NOPTA and the relevant Joint Authority.

[2] At the time of EP submission, the application for a pipeline licence to authorise the proposed Wilcox pipeline connecting the WA-7-R (Wilcox) field development to existing NWS infrastructure, is undergoing assessment by NOPTA.

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1.3 Scope of the Environment Plan

The scope of this EP covers the activities that define the Petroleum Activity, as described in Section 3, for a period of up to five years. The Operational Area defines the spatial boundary within which the Petroleum Activity is undertaken.

This EP addresses the environmental impacts from planned activities and the environmental risks associated with potential unplanned events arising from the Petroleum Activity within the Operational Area.

Transit to and from the Operational Area by support vessels, and port activities associated with these vessels, are not within the scope of this EP. Vessel operations outside of the Operational Area (e.g., transit to and from port) are managed in accordance with applicable maritime legislation and other regulatory requirements.

Section 3 contains a detailed description of the infrastructure and activities covered by this EP.

Full decommissioning of the GWA facility is not planned within the five-year duration of this EP. However, wells, pipelines and other subsea infrastructure that cease to be required for the Petroleum Activity during the life of the EP may be subject to a risk-based assessment to determine whether removal prior to end of field life (EOFL), or retention until EOFL, represents the lowest risk (ALARP) outcome.

Decommissioning activities associated with EOFL, or activities of a scale or nature not otherwise assessed within this EP, will be subject to separate future environmental assessment and approvals, including a future EP where required.

1.4 Environment Plan summary

Table 1-1 summarises the content of this EP, as required by Regulation 35(7).

Table 1-1: EP summary

EP summary material requirement	Relevant section of this EP containing EP summary material
The location of the activity	Section 3.2
A description of the receiving environment	Section 4
A description of the activity	Section 3
Details of the environmental impacts and risks	Section 6
The control measures for the activity	Section 6
The arrangements for ongoing monitoring of the titleholder's environmental performance	Section 7.7
Response arrangements in the oil pollution emergency plan	Section 7.14, Appendix G, and Appendix H
Consultation already undertaken and plans for ongoing consultation	Section 5 and Section 7.12
Details of the titleholder's nominated liaison person for the activity	Section 1.6.1.2

1.5 Structure of the Environment Plan

The EP has been structured to reflect the process and requirements of the Environment Regulations, as outlined in Table 1-2.

Table 1-2: EP process phases, applicable Environment Regulations and relevant section of EP

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 34(a): Is appropriate for the nature and scale of the activity	Regulation 21: • Environmental assessment Regulation 22: • Implementation strategy for the EP	The principle of 'nature and scale' is applicable throughout the EP	Section 2 Section 3 Section 4 Section 5

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Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
	Regulation 24: • Other information in the EP		Section 6
Regulation 34(b): Demonstrates that the environmental impacts and risks of the activity will be reduced to ALARP Regulation 34(c): Demonstrates that the environmental impacts and risks of the activity will be of an acceptable level	Regulations 21(1)–21(7): • 21(1) Description of the activity • 21(2) and (3) Description of the environment • 21(4) Requirements • 21(5) and (6) Evaluation of environmental impacts and risks • 21(7) Environmental performance outcomes and standards • Regulations 24(a)–24(b): • A statement of the titleholder's corporate environmental policy • A report on all consultations between the titleholder and any relevant person	Set the context (activity and existing environment) Define 'acceptable' (the requirements, the corporate policy, relevant persons) Detail the impacts and risks Evaluate the nature and scale Detail the control measures – ALARP and acceptable	Section 1 Section 2 Section 3 Section 4 Section 5 Section 6 Section 7 Appendix A Appendix B Appendix C Appendix F
Regulation 34(d): Provides for appropriate environmental performance outcomes, environmental performance standards and measurement criteria	Regulation 21(7): • Environmental performance outcomes and standards	Environmental performance outcomes (EPOs) Environmental performance standards (EPSs) Measurement criteria (MCs)	Section 6
Regulation 34(e): Includes an appropriate implementation strategy and monitoring, recording and reporting arrangements	Regulation 22: • Implementation strategy for the EP	Implementation strategy, including: Environmental Management System (EMS) Performance monitoring Oil Pollution Emergency Plan (OPEP – per Appendix G) and operational and scientific monitoring Ongoing consultation	Section 7 Appendix G
Regulation 34(f): Does not involve the activity or part of the activity, other than arrangements for environmental monitoring or for responding to an emergency, being undertaken in any part of a declared World Heritage property within the meaning of the EPBC Act.	Regulations 21(1)–21(3): • 21(1) Description of the activity • 21(2) Description of the environment • 21(3) Without limiting Regulation 21(2)(b), relevant values and sensitivities may include any of the following: o (a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act; o (b) the national heritage values of a National Heritage place within the meaning of that Act;	No activity, or part of the activity, undertaken in any part of a declared World Heritage property	Section 3 Section 4 Section 6 Appendix C

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Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
	○ (c) the ecological character of a declared Ramsar wetland within the meaning of that Act; ○ (d) the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act; ○ (e) the presence of a listed migratory species within the meaning of that Act; ○ (f) any values and sensitivities that exist in, or in relation to, part or all of: ▪ (i) a Commonwealth marine area within the meaning of that Act; or ▪ (ii) Commonwealth land within the meaning of that Act.		
Regulation 34(g): (i) the titleholder has carried out the consultations required by Regulation 25 (ii) the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate	Regulation 25: • Consultation with relevant authorities, persons and organisations, etc. Regulation 24(b): • A report on all consultations between the titleholder and any relevant person	Consultation undertaken in the preparation of this EP.	Section 5 Appendix F
Regulation 34(h): Complies with the Act and the regulations	Regulation 21(4)(a): • Describe the requirements, including legislative requirements, that apply to activity and are relevant to the environmental management of the activity Regulation 23: • Details of the titleholder and liaison person Regulation 24(a): • A statement of the titleholder's corporate environmental policy Regulation 24(c): • Details of all reportable incidents in relation to the proposed activity	All contents of the EP must comply with the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (OPGGS Act) and the Environment Regulations	Section 1.6 Section 1.8 Section 7.13 Appendix A Appendix E

1.6 Description of the titleholder

Woodside is the titleholder for the Petroleum Activity, on behalf of the Joint Venture comprising of Woodside Energy Ltd., BP Developments Australia Pty. Ltd., Woodside Energy (North West Shelf) Pty Ltd, Chevron Australia Pty Ltd, Japan Australia LNG (MIMI) Pty. Ltd., CNOOC NWS Private Limited and Shell Australia Pty Ltd.

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1.6.1 Details of titleholder and nominated liaison person

In accordance with Regulation 23 of the Environment Regulations, details of the titleholder, liaison person and arrangements for notifying changes are described below.

1.6.1.1 Titleholder

Woodside Energy Ltd.

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 63 005 482 986

1.6.1.2 Nominated liaison person

Nicolas Wirtz

Corporate Affairs Manager

11 Mount Street

Perth, Western Australia

Telephone: 08 9348 4000

Email: feedback@woodside.com

1.6.2 Arrangements for notifying change

If the titleholder, titleholder's nominated liaison person, or the contact details for either change, then NOPSEMA will be notified in writing within 2 weeks or as soon as practicable.

1.7 Woodside Management System

The Woodside Management System (WMS), provides a structured framework of documentation to set common expectations governing how all employees and contractors at Woodside will work. Many of the standards presented in Section 6 are drawn from the WMS documentation, which comprises four elements as outlined below (and illustrated in Figure 1-1):

- Our Values and Policies: Set the enterprise-wide direction for Woodside by governing our behaviours, actions, and business decisions and ensuring we meet our legal and other external obligations.
- Expectations: Set essential activities or deliverables required to achieve the objectives of the key business activities and provide the basis for developing processes and procedures.
- Processes and Procedures: Processes identify the set of interrelated or interacting activities that transforms inputs into outputs, to systematically achieve a purpose or specific objective. Procedures specify what steps, by whom, and when required to carry out an activity or a process.
- Guidelines: Provide recommended practice and advice on how to perform the steps defined in procedures, together with supporting information and associated tools. Guidelines provide advice on how activities or tasks may be performed, information that may be taken into consideration, or how to use tools and systems.

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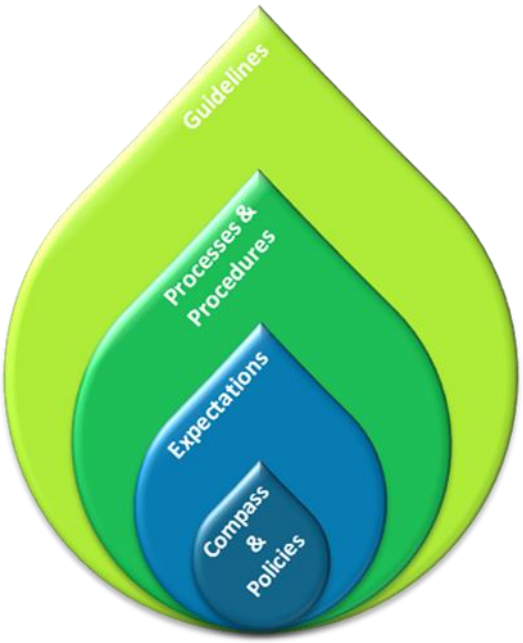


Figure 1-1: The four major elements of the Woodside Management System Seed

The WMS is organised within a business process hierarchy based on key business activities to ensure the system remains independent of organisation structure, is globally applicable, and is scalable wherever required. These key business activities are grouped into 'management', 'support' and 'value stream' activities as shown in Figure 1-2. The value stream activities capture, generate and deliver value throughout the exploration and production lifecycle. The management activities influence all areas of the business, while support activities may influence one or more value stream activities.

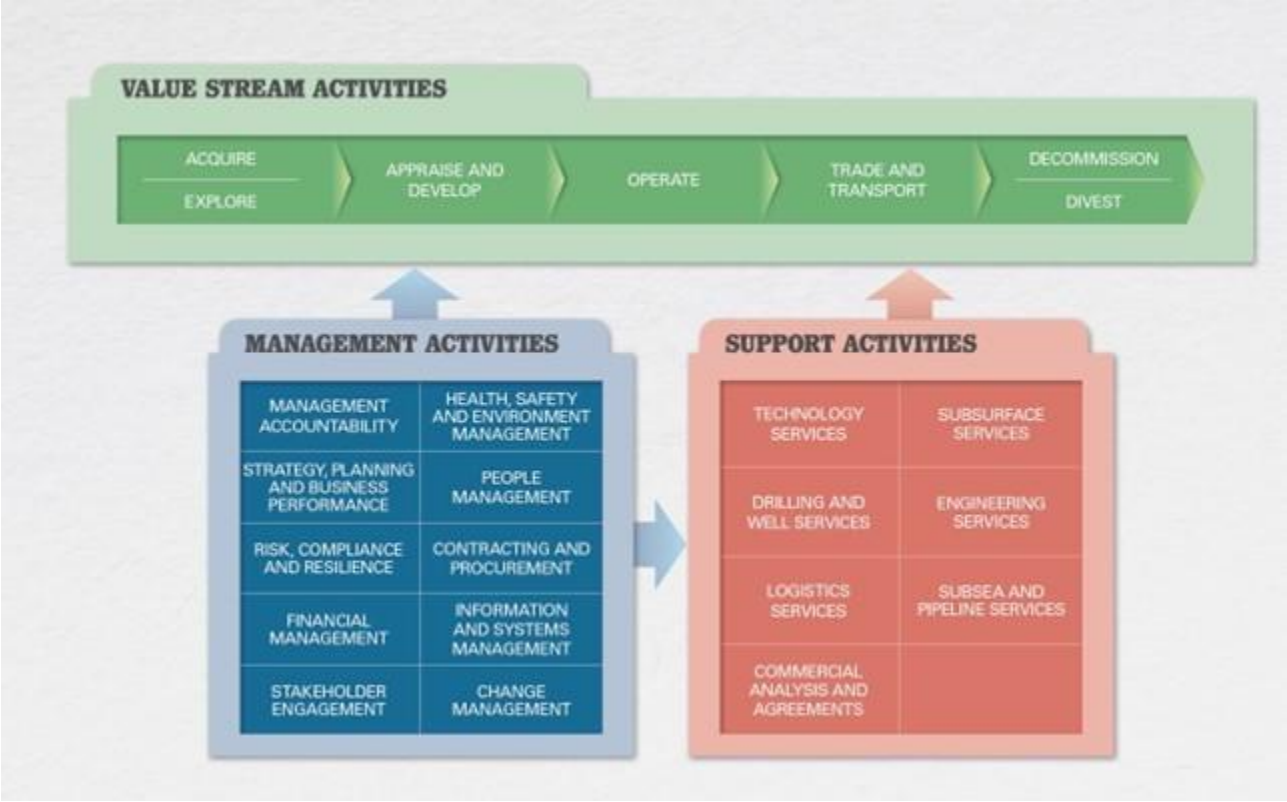


Figure 1-2: The Woodside Management System business process hierarchy

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1.7.1 Environment and Biodiversity Policy

In accordance with Regulation 24(a) of the Environment Regulations, Woodside's Environment and Biodiversity Policy is provided in Appendix A of this EP.

The Environment and Biodiversity Policy is reviewed regularly and updated as required. The Environment and Biodiversity Policy is made available on our website: https://www.woodside.com/who-we-are/corporate-governance-and-policies. This EP will be implemented in accordance with the current Environment and Biodiversity Policy as shown on our website.

1.8 Description of relevant requirements

In accordance with Regulation 21(4) of the Environment Regulations, a description of requirements, including legislative requirements, that apply to the Petroleum Activity and relevant to managing associated impacts and risks are detailed in Appendix B and key legislation is summarised in the following paragraphs.

1.8.1 *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth)

The OPGGS Act sets up a system for regulating offshore petroleum and greenhouse gas (GHG) activities beyond 3 nautical miles (nm) from the baseline at which the breadth of the territorial sea is measured to the outer limits of the continental shelf of the mainland (and islands) to the outer extent of the Australian Exclusive Economic Zone at 200 nm.

Under the OPGGS Act, the Environment Regulations apply to petroleum and GHG activities in Commonwealth waters and are administered by NOPSEMA. The objective of the Environment Regulations is to ensure petroleum activities are performed in a manner:

- consistent with the principles of ESD set out in section 3A of the EPBC Act.
- such that environmental impacts and risks of the activity will be reduced to ALARP; and
- such that environmental impacts and risks of the activity will be of an acceptable level.

This EP has been prepared in accordance with the relevant requirements of the OPGGS Act and the Environment Regulations.

Relevant decommissioning requirements of the OPGGS Act are detailed in Table 1-3.

Table 1-3 Relevant decommissioning requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act*

Section number	Relevant requirement	Relevant section of the EP
Section 270(c)(i) and Section 270(c)(ii)	The Joint Authority may consent to the surrender sought by the application only if the registered holder of the permit, lease or licence: (c) has: (i) to the satisfaction of NOPSEMA, removed or caused to be removed from the surrender area (defined by subsection (7)) all property brought into the surrender area by any person engaged or concerned in the operations authorised by the permit, lease or licence, or (ii) made arrangements that are satisfactory to NOPSEMA in relation to that property, and…	Not relevant, decommissioning not proposed under this EP
Section 572(2)	A titleholder must maintain in good condition and repair all structures that are, and all equipment and other property that is: (a) in the title area, and (b) used in connection with the operations authorised by the permit, lease, licence or authority	Section 3.6
Section 572(3)	A titleholder must remove from the title area all structures that are, and all equipment and other property that is, neither used nor to be used in connection with the operations:	Section 7.3

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Section number	Relevant requirement	Relevant section of the EP
	(a) in the title area, and (b) used in connection with the operations authorised by the permit, lease, licence or authority	

1.8.2 *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

The EPBC Act includes objectives to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places in Australia, including matters of national environmental significance (MNES) protected under Part 3 of the EPBC Act. The EPBC Act also sets a framework to ensure that actions taken on, or impacting upon, Commonwealth land or waters are consistent with the principles of ESD.

The GWA facility commenced operations in 1995 and subsequent developments, tie-ins and projects have been referred for assessment under the EPBC Act, including:

- Echo Yodel Development (2000/11), the action was determined to be a controlled action under the EPBC Act and subsequently approved by the Environment Minister, subject to approval conditions.
- 'Goodwyn A' Low Pressure Train Project (EPBC 2003/014), the decision by the Environment Minister determined the action is not a controlled action.
- Perseus over Goodwyn Development (2004/1326), the decision by the Environment Minister determined the action is not a controlled action.
- Greater Western Flank (GWF) Phase 1 Gas Development (2011/5980) the decision by the Environment Minister determined the action is not a controlled action if undertaken in a particular manner.
- Greater Western Flank 2 and 3 were included in the Greater Western Flank Gas Development (2005/2464), the decision by the Environment Minister determined the action is not a controlled action.

There are no EPBC Act approval conditions relevant to the scope of this EP.

On 28 February 2014, NOPSEMA's environmental management authorisation process was endorsed by the then Minister for the Environment as a Program that meets the requirements of Part 10 of the EPBC Act. This ministerial endorsement streamlined environmental approvals for offshore petroleum activities and made NOPSEMA the sole regulator for environmental management of petroleum activities in Commonwealth waters.

The Streamlining Offshore Petroleum Approvals Program (Program) under the EPBC Act requires proponents of an offshore project after 28 February 2014 to submit an Offshore Project Proposal to NOPSEMA for assessment. An accepted Offshore Project Proposal (OPP) must be in place prior to submission and assessment of Environment Plans for the individual component activities. The definition of environment incorporated in the Program encompasses all aspects of the environment including, but not limited to, EPBC Act Part 3 protected matters. As a result, all Program functions relating to protection of the environment apply for EPBC Act Part 3 matters.

1.8.2.1 Goodwyn Area Infill Development Offshore Project Proposal

Woodside submitted the Goodwyn Area Infill Development Offshore Project Proposal (GWA OPP) to NOPSEMA for assessment in February 2024 and NOPSEMA accepted the OPP in August 2025 which included up to 8 wells tied into existing Greater Western Flank subsea infrastructure and production through the GWA facility. Existing GWF subsea infrastructure and the ongoing operation of the existing GWA facility were outside the direct scope of the OPP.

In accordance with Regulations 26 and 17 of the Environment Regulations, a titleholder must have submitted and have an accepted EP in place before commencing an activity. This EP includes the ongoing operation of up to seven new production wells (GWF4 or future tie-in) and associated subsea infrastructure developed under the accepted OPP.

The GWA OPP sets out the environmental performance outcomes (EPOs) for the project and the level of performance to be achieved, to ensure that environmental impacts and risks will be of an acceptable level and the project is consistent with the principles of ESD. Relevant EPOs established under the GWA OPP for

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operation of infrastructure developed under the project have been considered and reflected within this EP, where applicable to the operational scope of the Petroleum Activity.

In accordance with Regulation 56 of the Environment Regulations, this EP references the accepted GWA OPP where relevant to the Petroleum Activity. The accepted GWA OPP is available on NOPSEMA's website using the following link: https://www.nopsema.gov.au/A1248938.

1.8.2.2 Recovery plans and threat abatement plans

Under Section 139(1)(b) of the EPBC Act, the Environment Minister must not act inconsistently with a recovery plan for a listed threatened species or ecological community, or a threat abatement plan for a species or community protected under the Act. Similarly, under Section 268 of the EPBC Act:

> *'A Commonwealth agency must not take any action that contravenes a recovery plan or a threat abatement plan.'*

In relation to offshore petroleum activities in Commonwealth waters, these requirements are administered by NOPSEMA via the commitments included in the Program. Specifically:

- NOPSEMA will not accept an EP that proposes activities that will result in unacceptable impacts to a listed threatened species or ecological community.
- NOPSEMA will not accept an EP that is inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological community.
- NOPSEMA will have regard to any approved conservation advice in relation to a threatened species or ecological community before accepting an EP.

An assessment of the Petroleum Activity against relevant recovery plans and threat abatement plans is provided in Section 6.10.

1.8.2.3 Australian Marine Parks

Australian Marine Parks (AMPs) are marine Commonwealth reserves declared under the EPBC Act and are recognised for conserving marine habitats and the species that live and rely on these habitats. The Director of National Parks (DNP), supported by Parks Australia, is responsible for the management of AMPs and associated management plans. Under Section 362(2) of the EPBC Act, the Commonwealth and Commonwealth agencies must not perform functions or exercise powers in relation to a Commonwealth reserve that are inconsistent with management plans. Accordingly, NOPSEMA is required to consider the potential impacts of petroleum activities on AMPs when assessing an EP.

AMP management plans establish zoning arrangements and specify the activities that may be undertaken in each zone. The zones are assigned conservation objectives aligned with the Australian International Union for Conservation of Nature (IUCN) reserve management principles outlined in Schedule 8 of the Environment Protection and Biodiversity Conservation Regulations 2025 (EPBC Regulations).

Section 4 describes the AMPs and AMP zones overlapped by the Operational Area and environment that may be affected (EMBA), including those potentially interacted with by the Petroleum Activity.

The Petroleum Activity may include activities in the Montebello Marine Park Multiple Use Zone. In accordance with the North-west Marine Parks Network Management Plan (DNP 2018a), offshore petroleum activities and oil spill response activities may be undertaken within Multiple Use Zones and Special Purpose Zone Trawl areas (both IUCN category VI), subject to applicable approvals and conditions.

The DNP has issued class approvals for petroleum activities within designated IUCN Category VI AMP zones. For the Petroleum Activity, the North-west Marine Parks Network Mining Operations Class Approval is relevant, as detailed in Table 1-4.

Table 1-4: Conditions of Class Approval relevant to the Petroleum Activities

Number	Condition	Relevant section of EP
1	The Approved Actions must be conducted in accordance with:	Conditions 1a, b, c and f are met by the submitted EP.

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Number	Condition	Relevant section of EP
	(a) an Environment Plan accepted under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009; (b) the EPBC Act; (c) the EPBC Regulations (d) the North-west Network Management Plan; (e) any prohibitions, restrictions or determinations made under the EPBC Regulations by the Director of National Parks; and (f) all other applicable Commonwealth and state laws (to the extent those laws are capable of operating concurrently with the laws and instruments described in paragraphs (a) to (e)).	Condition 1d - the impacts on the marine park values have been considered in Section 6. Condition 1e - consultation has been undertaken with the Director of National Parks and no prohibitions, restrictions or determinations have been made (see Section 5 of this EP)
2	If requested by the Director of National Parks, an Approved Person must notify the Director prior to conducting Approved Actions within Approved Zones.	Section 7.12 of this EP describes requirements to notify the DNP prior to activities within the Montebello Multiple Use Zone.
3	If requested by the Director of National Parks, an Approved Person must provide the Director with information relating to undertaking the Approved Actions (or gathered while undertaking the Approved Actions), that is relevant to the Director's management of the Approved Zones.	If requested by the Director of National Parks, information relating to undertaking the Approved Actions (or gathered while undertaking the Approved Actions), that is relevant to the Director's management of the Approved Zones will be provided.

1.8.2.4 World Heritage Properties

Section 323 of the EPBC Act requires the Commonwealth to prescribe principles for the management of World Heritage Properties (WHPs). Regulation 10.01 and Schedule 5 of the EPBC Regulations establish the Australian World Heritage management principles, which set out requirements for management and protection of WHPs.

Table 1-5 outlines the World Heritage management principles relevant to the assessment of potential impacts and risks from the Petroleum Activity to WHPs within the EMBA, as described in Section 4.8.

The Operational Area does not overlap any WHPs and the Petroleum Activity does not include an action that is likely to have a significant impact on the world heritage values of any WHP.

Table 1-5: Relevant management principles under Schedule 5 - Australian World Heritage management principles of the EPBC Act.

Number	Principle	Relevant section of the EP
3	**Environmental impact assessment and approval** 3.01 This principle applies to the assessment of an action that is likely to have a significant impact on the World Heritage values of a property (whether the action is to occur inside the property or not).	3.01 and 3.02: Three WHP are relevant to the Petroleum Activity (Murujuga Cultural Landscape, Shark Bay and Ningaloo Coast). The Petroleum Activity does not involve an action that is likely to have a significant impact on the world heritage values of these WHPs. This EP includes an assessment of impacts and risks to WHPs, as outlined in Section 6. These principles are met by the submitted EP.
	3.02 Before the action is taken, the likely impact of the action on the World Heritage values of the property should be assessed under a statutory environmental impact assessment and approval process.	
	3.03 The assessment process should: • (a) identify the World Heritage values of the property that are likely to be affected by the action; and • (b) examine how the World Heritage values of the property might be affected; and	3.03 (a): World heritage values are identified in Section4. 3.03 (b): The world heritage values that may be affected are considered in an assessment of impacts and risks for the Petroleum Activity in Section 6, specifically:

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Number	Principle	Relevant section of the EP
	• (c) provide for adequate opportunity for public consultation.	• planned indirect emissions are assessed in Section 6.7.8, which includes consideration of principle 3.01. • unplanned risks relevant to WHPs are assessed in Section 6.8. • assessment of impacts and risks associated with cultural values are considered in Section 6.11. 3.03 (c): Relevant persons consultation and feedback received in relation to impacts and risks to WHP is included in Section 5 and Appendix F. Woodside facilitates ongoing consultation for the duration of the EP, as outlined in Section 5. Principles are met by the accepted EP.
	3.04 An action should not be approved if it would be inconsistent with the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.	3.04, 3.05 and 3.06: The management plans and objectives relevant to Murujuga Cultural Landscape WHP are: • The Murujuga Cultural Landscape Strategic Management Framework (2022) • Murujuga National Park Management Plan (2013, as amended in 2023) • Murujuga Cultural Management Plan (2016) The management plans and objectives relevant to the Ningaloo Coast WHP are: • Ningaloo Coast Strategic Management Framework (2011) • Ningaloo Marine Park Management plan (2002) • Ningaloo Marine Park and Muiron Islands Marine Management Plan (2005 and amended in 2016) • Nyinggulu (Ningaloo) Coastal Reserves: Red Bluff to Winderabandi joint management plan 101 (2022) The management plans and objectives relevant to the Shark Bay WHP are: • Shark Bay Terrestrial Reserves and Proposed Reserve Additions Management Plan (2012) • Shark Bay Marine Reserves Management Plan (1996–2006) • Shark Bay World Heritage Property Strategic Plan (2008-2020) • Shire of Shark Bay Town Planning Scheme No. 4 These management plans give effect to the duties and obligations of Australia under the World Heritage Convention and facilitate the protection, conservation, presentation or transmission to future generations of the world heritage values of the properties. For further consideration of the above management plans and their objectives, where relevant to the Petroleum Activity, including a demonstration of how this EP is not inconsistent with the protection, conservation, presentation or transmission to future generations associated with these plans, refer to Section 6. Specifically:
	3.05 Approval of the action should be subject to conditions that are necessary to ensure protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.	
	3.06 The action should be monitored by the authority responsible for giving the approval (or another appropriate authority) and, if necessary, enforcement action should be taken to ensure compliance with the conditions of the approval.	

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Number	Principle	Relevant section of the EP
		• planned indirect emissions are assessed in Section 6.7.8, which includes consideration of principle 3.01. • unplanned risks applicable to WHPs are assessed in Section 6.8. • assessment of impacts and risks associated with cultural values are considered in Section 6.11. Principles are met by acceptance and implementation of the EP.

Note: Sections 1 – General Principles and 2 – Management Planning of Schedule 5 are not considered relevant to the scope of this EP and, therefore, have not been included.

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2. ENVIRONMENT PLAN PROCESS

2.1 Overview

This section outlines the process Woodside follows to prepare the EP once an activity has been defined as a Petroleum Activity. This includes a description of the environmental risk management methodology that is used to identify, analyse and evaluate risks to meet ALARP and acceptability requirements; and to develop EPOs and EPS'. This section also describes Woodside's risk management methodologies applicable to implementation strategies applied during the activity. The process outlined in this section is repeated when submitting a revised EP having regard to changes to operational processes as well as confirming that the environmental management practices applied remain consistent with good industry practice.

2.2 Environment risk management methodology

2.2.1 Woodside risk management process

Woodside recognises that risk is inherent to its business and that effective management of risk is vital to delivering on company objectives, success and continued growth. Woodside is committed to managing risk proactively and effectively. The objective of Woodside's risk management system is to provide a consistent process for recognising and managing risks across Woodside's business. Achieving this objective includes ensuring risks consider impacts across these key areas of exposure: health and safety, environment, finance, reputation and brand, legal and compliance, and social and cultural.

The environmental risk management methodology used in this EP is based on Woodside's Risk Management Procedure. This procedure aligns to industry standards, such as international standard ISO 31000. WMS risk management procedures, guidelines and tools provide guidance of specific techniques for managing risk, tailored for particular areas of risk within certain business processes. Procedures applied for environmental risk management include (Section 7.2.7):

- Health, Safety and Environment Management Procedure;
- Impact Assessment Procedure; and
- Process Safety Management Procedure.

The risk management methodology provides a framework to demonstrate that risks and impacts are continually identified, reduced to ALARP and assessed to be at an acceptable level, as required by the Environment Regulations. The key steps of Woodside's Risk Management Process are shown in Figure 2-1. A description of each step and how it is applied to the scopes of this activity is provided in Section 2.2 to Section 2.10.



Figure 2-1: Woodside risk management process

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2.2.2 Health, Safety and Environment Management Procedure

The Health, Safety and Environment Management Procedure provides the structure for managing health, safety and environment (HSE) risks and impacts across Woodside, defines the decision authorities for company-wide HSE management activities and deliverables, and supports continuous improvement in HSE management.

2.2.3 Impact Assessment Procedure

To support effective environmental risk assessment, Woodside's Impact Assessment Procedure (Figure 2-2) provides the steps to meet the required environment, health and social standards by ensuring impact assessments are undertaken appropriate to the nature and scale of the activity, the regulatory context, the receiving environment, interests, concerns and rights of relevant persons, and the applicable framework of standards and practices.

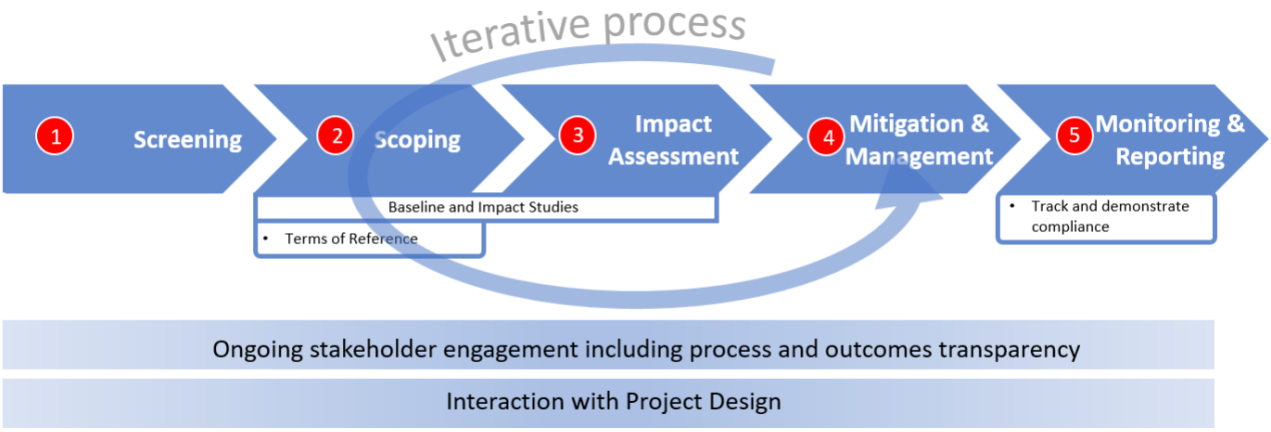


Figure 2-2: Woodside's impact assessment process

2.2.4 Process Safety Management Procedure and Process Safety Risk Assessment Procedure

Due to the nature and scale of petroleum activities, Woodside's Process Safety Management Procedure establishes Woodside's framework for Process Safety Management (Section 7.2.2). This framework includes the Process Safety Risk Assessment Procedure (PSRA). The PSRA is a key part of Woodside's process safety management framework for managing the integrity of systems and processes that handle hazardous substances over the exploration and production lifecycle. The PSRA sets out methods to ensure that process safety risks are understood and controlled, including that all process safety hazards are systematically identified, assessed and treated so that the associated risks are reduced to a level that is tolerable and ALARP.

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2.3 Environment Plan development process

Figure 2-3 illustrates the EP development process. Each element of this process is discussed further in the following sections.

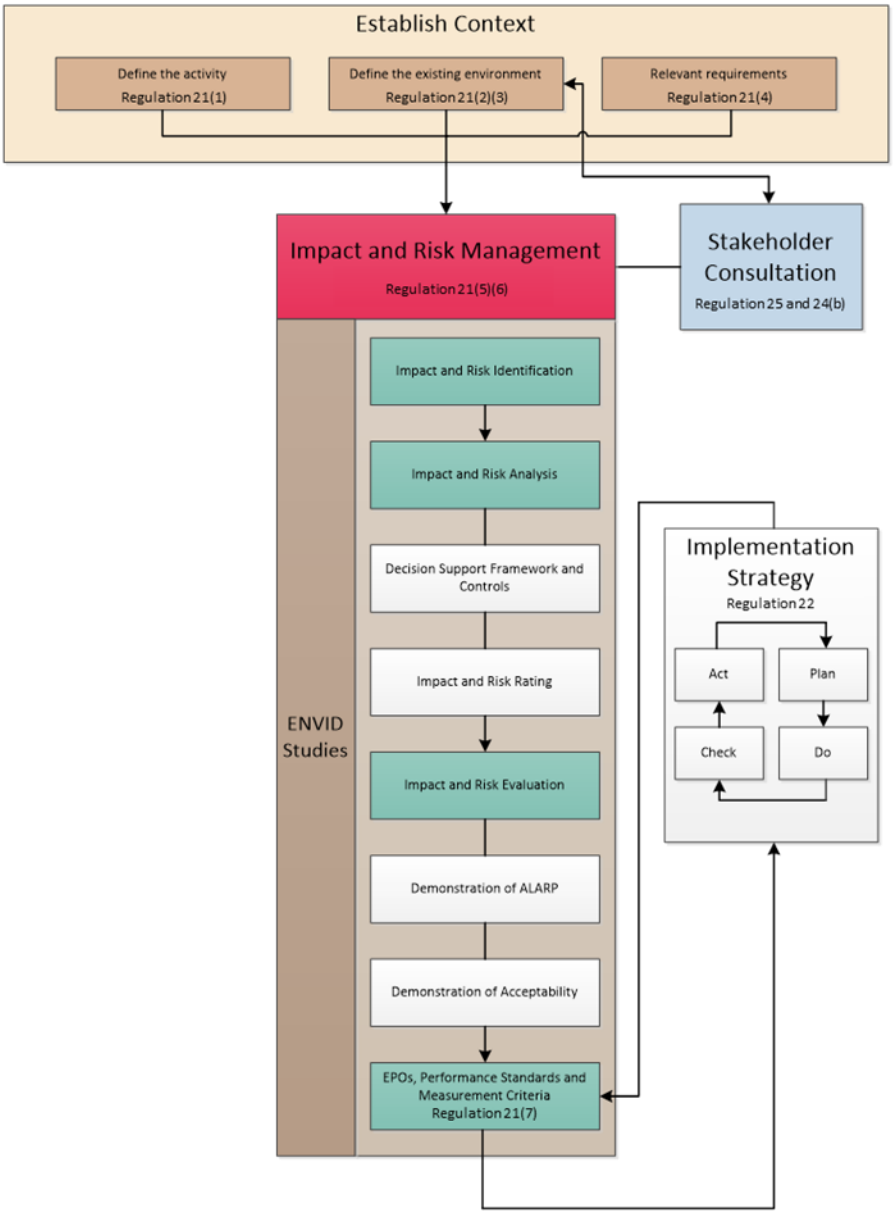


Figure 2-3: EP development process

2.4 Establish the context

Context is established by considering the proposed activities associated with a Petroleum Activity, and the environment in which the activities are planned to take place.

Describing the activity involves the evaluation of whether the activity meets the definition of a 'Petroleum Activity' as defined in the Environment Regulations. The activity is then described in relation to the location, what is to be undertaken and how. This allows for the identification of environmental aspects for each activity.

2.4.1 Activity description

The EP describes the activity, including:

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- the location or locations of the activity; general details of the construction and layout of the facility used in undertaking the activity
- an outline of the operational details of the activity and proposed timetables for undertaking the activity
- additional information relevant to consideration of environmental impacts and risks of the activity.

The 'what' and 'how' are described in the context of 'environmental aspects' to inform the impact assessment for planned (routine and non-routine) and risk assessment for unplanned (accidents, incidents, emergency conditions) activities.

This activity is described in Section 3 and is referred to as the Petroleum Activity.

2.4.2 Existing environment description

Environmental values and sensitivities relevant to the Petroleum Activity are described in Section 4 to the extent necessary to inform impact and risk assessments associated with the Petroleum Activity.

A full description of relevant environmental values and sensitivities is contained within the Master Existing Environment document provided in Appendix C.

2.4.3 Environmental legislation and other requirements

Relevant legislation and other requirements applicable to the Petroleum Activity are presented in Section 1.8 and Appendix B, and have been considered throughout the development of this EP.

2.4.4 Impact and risk management

2.4.4.1 Impact and risk identification and analysis

The first step in environmental impact and risk management is to identify all credible sources of environmental impacts and risks associated with the Petroleum Activity, including potential emergency and accidental events. This may include environment impacts and risks that are a consequence of the Petroleum Activity but are not directly within Woodside's control. In this EP:

- planned (routine and non-routine) activities, including contingent activities, have the potential for inherent changes to the environment, are termed environmental 'impacts.'
- unplanned events, including potential emergency and accidental events which have the potential to result in a change to the environment, are termed environmental 'risks.'

An environmental impacts and risks identification and assessment workshop (ENVID) was undertaken by multidisciplinary teams comprising relevant operational, technical and environmental personnel with sufficient breadth of knowledge, training, and experience to reasonably assure that risks and impacts were identified, and their potential environmental consequences assessed. Impacts and risks were identified, during the workshop, for both planned (routine and non-routine) activities and unplanned (accidents/incidents/emergency conditions) events. During this process, impacts and risks identified as not applicable (not credible) were removed from the assessment.

During the ENVID, environmental impacts and risks were assessed, and controls were assigned to manage the impact or risk. The ENVID also supported identification of relevant stakeholders to be consulted as part of development of this EP (Section 5). The output of the ENVID, an environmental impacts and risk register, was then used as a basis to develop the impact and risk assessment section of this EP (Section 6).

The environmental impact and risk assessments presented in this EP has been informed by historic as well as more recent hazard and environmental risk identification studies (e.g. HAZID/ENVID) as well as consequence modelling studies for high consequence, low probability environmental risks. These studies have been reviewed and revalidated, as required, for the revision of this EP. In preparing the revision, Woodside also considers environmental performance and compliance information gathered during the implementation phase of the in-force EP. Further, feedback from NOPSEMA to Woodside across Woodside's portfolio of EPs has been considered and integrated, where relevant.

Impacts, risks and potential consequences were identified based on planned and potential interaction with the activity (based on the description in Section 3), the existing environment (Section 4) and the outcomes of

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Woodside's stakeholder engagement process (Section 5). The environment outputs of applicable risk and impact workshops and associated studies are referred to as ENVID in this EP.

Impacts and risks were evaluated and tabulated for each planned activity and unplanned event, respectively. Environmental impacts and risks were recorded in an environmental impacts and risk register. The output of the workshop is used to present the impact or risk assessment and form the basis of EPOs, EPSs, and MCs. This information is presented in Section 6, following the layout presented in Table 2-1.

Table 2-1: Example of layout of impact or risk evaluation summary

Impact and risk evaluation summary													
Source of impact or risk	***Environmental value(s) potentially impacted or at risk***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Summary of source of impact or risk													

2.4.4.2 Decision support framework

To support the impact and risk assessment process and Woodside's determination of acceptability, Woodside's HSE risk management procedures include using a decision support framework based on principles set out in the Guidance on Risk Related Decision Making (OEUK 2025). Application of the decision support framework confirms:

- activities do not pose an unacceptable environmental impact or risk
- appropriate focus is placed on activities where the impact or risk is anticipated to be acceptable and demonstrated to be ALARP
- appropriate effort is applied to manage risks based on the uncertainty of the risk, the complexity and risk rating (i.e. potential higher-order environmental impacts are subject to further evaluation and assessment).

The framework allows a decision type (A, B, or C) to be selected for each impact and risk, based on several criteria; the decision type is documented in the environmental impacts and risk register. Figure 2-4 summarises the framework, criteria, and resulting level of assessment for decision type A, B and C, which are discussed further below.

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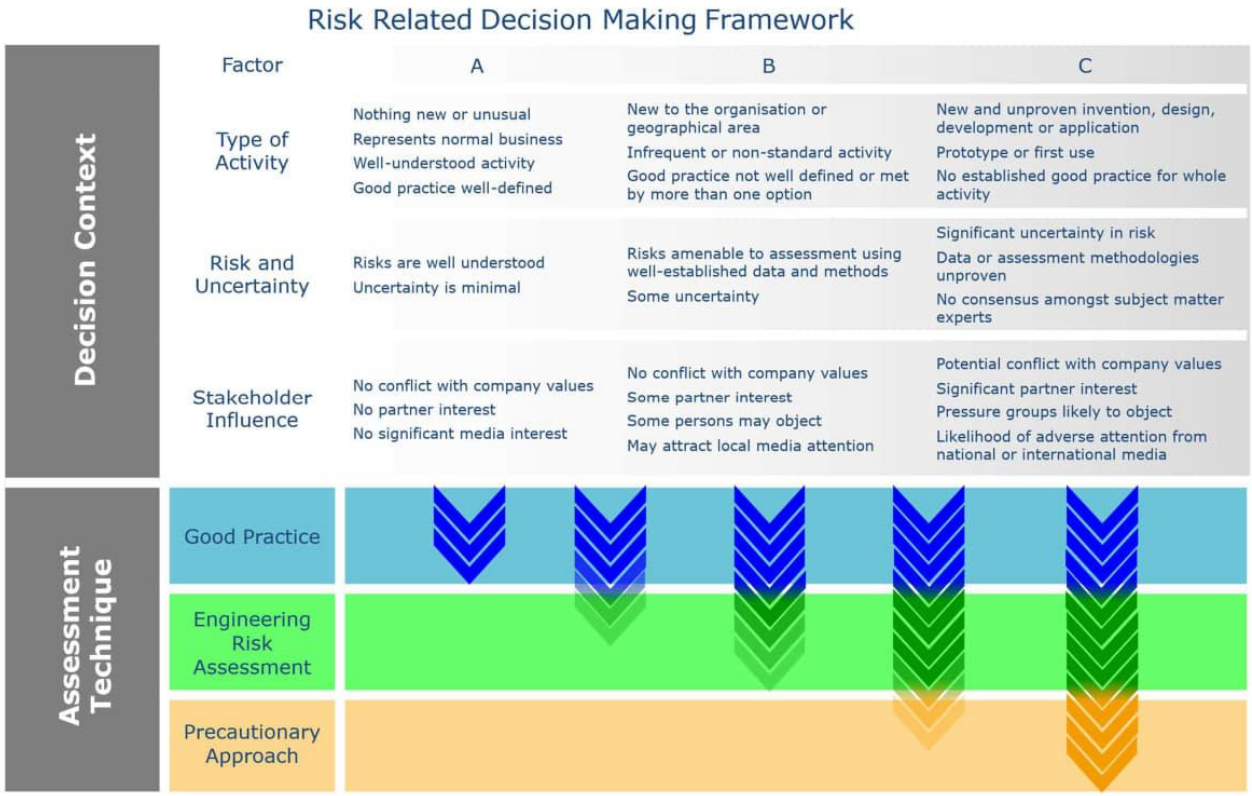


Figure 2-4: Risk-related decision-making framework

Source: (OEUK 2025).

2.4.4.2.1 Decision Type A

Decision Type A impacts and risks are well understood and established practice; they are generally recognised as good industry practice and are often embodied in legislation, codes and standards, and use professional judgement.

2.4.4.2.2 Decision Type B

Decision Type B impacts and risks typically involve greater uncertainty and complexity and are considered higher-order impacts and risks. These impacts and risks may deviate from established practice or have some lifecycle implications and therefore require further engineering risk assessment to support the decision and ensure that the risk is ALARP.

2.4.4.2.3 Decision Type C

Decision Type C impacts and risks typically have significant risks related to environmental performance. Such risks typically involve greater complexity and uncertainty, therefore requiring the adoption of the precautionary approach. The risks may result in significant environmental impact, risk or exposure, or may elicit heightened stakeholder concerns. For these impacts and risks, in addition to Decision Type A and B tools, company and societal values need to be considered by undertaking broader internal and external stakeholder consultation as part of the impact and risk assessment process.

2.4.4.3 Decision support framework tools

The below framework tools were applied, as appropriate, when assessing each impact and risk to help identify control measures based on the selected decision type described above.

- Legislation, Codes and Standards (LCS): identifies the requirements of legislation, codes and standards that are to be complied with for the activity.

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- Good Industry Practice (GP): identifies further engineering control standards and guidelines that may be applied by Woodside above that required to meet the LCS.
- Professional Judgement (PJ): uses relevant personnel with the knowledge and experience to identify alternative controls. Woodside applies the hierarchy of control as part of the risk assessment to identify any alternative measures to control the risk.
- Risk-based Analysis (RBA): assesses the results of probabilistic analyses such as modelling, quantitative risk assessment and/or cost–benefit analysis to support the selection of control measures identified during the risk assessment process.
- Company Values (CV): identifies values identified in Woodside's code of conduct, policies and Our Values. Views, concerns and perceptions are to be considered from internal Woodside stakeholders directly affected by the planned impact or potential risk.
- Societal Values (SV): identifies the views, concerns and perceptions of relevant stakeholders and addresses relevant stakeholder views, concerns and perceptions.

2.4.4.4 Decision calibration

To determine that the decision type selected and the control measures applied are suitable, the following tools may be used for calibration (i.e. checking) where required:

- LCS/Verification of Predictions: Verification of compliance with applicable LCS and/or good industry practice.
- Peer Review: Independent peer review of PJs, supported by RBA, where appropriate.
- Benchmarking: Where appropriate, benchmarking against a similar facility or activity type or situation that has been deemed to represent acceptable risk.
- Internal Stakeholder Consultation: Consultation undertaken within Woodside to inform the decision and verify company values are met.
- External Stakeholder Consultation: Consultation undertaken to inform the decision and verify societal values are considered.

Where appropriate, additional calibration tools may be selected specific to the decision type and the activity.

2.4.5 Control measures

Once impacts and risks have been identified, the potentially affected receptors have been identified and understood, and the decision type has been selected, impact and risk reduction measures (i.e. controls) are applied. Controls are prioritised and categorised in accordance with the hierarchy of controls listed below, where risk reduction measures at the top of the hierarchy take precedence over risk reduction measures further down:

- elimination of the impact or risk by removing the hazard[3].
- substitution of a hazard with a less hazardous one.
- engineering controls including design measures to prevent or reduce the frequency, or detect or control, the impact or risk event (limiting the magnitude, intensity and duration) such as:
  - prevention: design measures that reduce the likelihood of a hazardous event occurring
  - detection: design measures that facilitate early detection of a hazardous event
  - control: design measures that limit the extent/escalation potential of a hazardous event
  - mitigation: design measures that protect the environment if a hazardous event occurs
  - response equipment: design measures or safeguards that enable clean-up/response after a hazardous event occurs.

[3] *A hazard has the potential to cause harm to the environment.*

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- procedures and administration including management systems and work instructions used to prevent or mitigate environmental exposure to hazards.
- emergency response and contingency planning including methods to enable recovery from the impact of an event (e.g. protection barriers deployed near the sensitive receptor).

As this EP is a revision of an existing EP, controls outlined in the previous revision were reviewed for effectiveness and updated, where necessary, to align with current Woodside best practice. The ENVID workshop also provided the opportunity to identify where additional controls may now be required and those controls were applied according to the process outlined above.

2.4.6 Impact and risk classification

Environmental impacts and risks are assessed to determine their potential impact consequence level or risk rating, which can then be evaluated, along with other criteria, against the ALARP and acceptability requirements under the Environment Regulations. The full process for impact and risk classification is described in the subsections below. Although this EP is a revision of an existing operations EP, a full impact and risk assessment was conducted as if it were a new Petroleum Activity. This allows Woodside the opportunity to analyse whether previous impact and risk consequence levels or risk ratings and existing control measures should be modified.

2.4.6.1 Impact classification

Using the Woodside Environment Risk and Impact Rating Tool as a guide, environmental impacts are assessed to determine the potential consequence level. The process for determining the consequence levels is described in Section 2.4.6.1.1

2.4.6.1.1 Assign the consequence level

The consequence level (Severe, Major, Moderate, Minor, Localised and Low-Level, and No Lasting Effect) is determined through a classification framework that incorporates:

- significance[4] of the feature of area
- scale of the impact on the feature (e.g. species, population, habitat) or area (size)
- recoverability, defined as the ability of the feature or area to naturally recover from the impact within a nominal period.

2.4.6.1.2 Consequence level descriptions

Table 2-2 describes the possible environment, community and culture consequence levels for each identified impact and risk, assuming all controls (preventative and mitigative) are absent or have failed. Where multiple receptors have the potential to be impacted, the worst-case consequence level is carried into the final impact and risk assessment and evaluation.

[4] For the purposes of describing the Woodside Environment Risk and Impact Rating Tool, references to significance in impact and risk classification, use significance as defined in the Woodside Environment Risk and Impact Rating Tool.

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Table 2-2: Woodside impact and risk matrix (environment and community and culture) consequence descriptions

Environment	Social and cultural	Consequence level	
Severe impact on a sensitive feature(s) or receiving environment, such as permanent impairment on a highly sensitive area or feature.	Severe, long-term impact to a community, social infrastructure or highly valued areas or items of international cultural and social significance.	***Severe***	***A***
Major impact on environmental feature(s) or area(s), such as impact on feature or area of national importance with limited ability to recover.	Major, long-term impact to a community, social infrastructure or highly valued areas or items of national cultural significance.	***Major***	***B***
Moderate impact on environmental feature(s) or area(s), such as impact on feature or area of heightened sensitivity with limited ability to recover.	Moderate, medium-term impact to a community, social infrastructure of highly valued areas or items of national cultural significance.	***Moderate***	***C***
Minor impact on environmental feature(s) or area(s) such as impact on feature of low significance with some ability to recover.	Minor, short-term impact to a community or areas or items of cultural significance.	***Minor***	***D***
Slight and low-level impact on environmental feature(s) or area(s) of low significance.	Slight, short-term impact to a community or areas or items of cultural significance.	***Localised and Low Level***	***E***
No lasting effect, localised impact not significant to environmental receptors	Temporary localised impact not significant to areas or items of cultural significance.	***No Lasting Effect***	***F***

2.4.6.2 Risk classification

The risk rating process assigns a level of risk to each risk event, measured in terms of consequence (Section 2.4.6.1.1) and likelihood (Section 2.4.6.1.2). The assigned risk rating is determined with controls in place; therefore, the risk rating is determined after identifying the decision type and appropriate control measures. The risk ratings are assigned using the Woodside risk matrix (refer to Table 2-4).

2.4.6.2.1 Assign the likelihood level

Likelihood is determined based on the chance of the selected worst-case consequence occurring, assuming reasonable effectiveness of preventative and mitigative controls (Table 2-3).

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Table 2-3: Woodside risk matrix likelihood levels

	Likelihood description					
	Remote	***Highly unlikely***	***Unlikely***	***Possible***	***Likely***	***Highly likely***
Frequency	1 in 100,000–1,000,000 years	1 in 10,000–100,000 years	1 in 1,000–10,000 years	1 in 100–1,000 years	1 in 10–100 years	>1 in 10 years
Experience	Unheard of in the industry	Has occurred once or twice in the industry	Has occurred many times in the industry but not in the company.	Has occurred once or twice in the company.	Has occurred frequently in the company.	Has occurred frequently in the location or activity.
Likelihood level	0	1	2	3	4	5

2.4.6.2.2 Determine the risk rating

The risk rating is derived from the consequence and likelihood levels determined above, in accordance with the Woodside Risk Matrix summarised in Table 2-4.

This risk rating is used as an input into the risk evaluation process and ultimately for prioritising further risk reduction measures. Once each risk is treated to ALARP, the risk rating articulates the ALARP baseline risk in the environmental impacts and risk register for the EP (Section 2.6).

Table 2-4: Woodside risk matrix determination of risk rating

Consequence level	Likelihood level					
	0	***1***	***2***	***3***	***4***	***5***
A	A0	A1	A2	A3	A4	A5
B	B0	B1	B2	B3	B4	B5
C	C0	C1	C2	C3	C4	C5
D	D0	D1	D2	D3	D4	D5
E	E0	E1	E2	E3	E4	E5
F	F0	F1	F2	F3	F4	F5

Risk rating
Severe
Very High
High
Moderate
Low

NOTE: Very High and Severe risks based on HS&E impacts are intolerable – Action Required

2.5 Classification and analysis of major environmental events

For Woodside's offshore production facilities, a further level of analysis is undertaken to identify, classify and analyse MEEs. This extra level of rigour is applied to ensure sufficient controls are in place for risks with potential Major and above consequences. In the health and safety area, Major Accident Events (MAEs) are identified using a similar process, which supports consistency in managing key risks within Woodside in accordance with Process Safety Risk Management Procedures.

Woodside defines a MEE as an event with potential environment, reputation (pertaining to environment events), social or cultural consequences of level B or higher as per Woodside's Risk Matrix (Table 2-4). MEEs are evaluated against credible worst-case scenarios that may occur when all controls are absent or have failed.

For this EP, the MEEs presented in the previous revision of the GWA Facility Operations EP were reviewed and revised to ensure they remain accurate and are adequately managed.

2.5.1 Major Environmental Events identification

The ENVID process identifies numerous sources of risk with differing consequence levels. These risks are screened to identify those that meet the MEE criteria. Identified MEE risks are then subject to further

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analysis, including detailed consequence modelling and probability/frequency assessment, and are evaluated for the 'appropriateness' of controls using a bowtie risk assessment approach.

Risks that do not meet the MEE definition, although screened out of the MEE process, are still evaluated for ALARP and acceptability using the methodology described in Section 2.6. Some high consequence/low probability events which do not meet the MEE consequence threshold may still undergo additional consequence and probability assessment where they could have a high adverse impact on the company's reputation or relationships with relevant persons, beyond requirement to demonstrate ALARP and acceptable risk levels following application of controls.

2.5.2 Major Environmental Events classification

A standard naming convention has been established for MEEs; this is based around ensuring the MEE titles reflect the cause of the event, e.g. 'subsea system loss of containment', rather than the event itself, e.g. significant hydrocarbon spill to the marine environment. The MEEs are assigned a unique identification code, e.g. MEE-01, MEE-02, etc.

2.5.3 Bowtie analysis

MEEs are subject to more detailed analysis using the bowtie risk assessment technique, which illustrates outcomes and controls in place to prevent the 'top event' or mitigate the consequences. The bowtie technique is adopted for MEEs as it:

- identifies the controls (prevention and mitigation barriers) necessary to ensure the risk is ALARP and of an acceptable level
- supports the process of demonstrating ALARP (described in Section 2.6)
- enables verification of and linking to the relevant sections of the WMS that supports barriers
- improves the capacity for lessons learned and incident prevention by being able to directly relate causes of an incident to those controls that failed
- ensures greater visibility and granularity in the assessment process and enables complex risk scenarios to be presented in an easy-to-understand format.

The bowtie technique shows the relationships between the 'causes' that may lead to a particular unwanted event ('top event'), together with the range of potential escalation paths that can lead to various 'outcomes' (or consequences). A bowtie also identifies the preventive barriers that act to prevent the top event from occurring specific for each cause, and the mitigation barriers that limit the potential consequences once the top event has occurred, specific to each credible MEE outcome.

2.5.4 Major Environmental Event register

A MEE register is prepared for each production facility after completing bowtie diagrams. This register records the MEE identification process, groupings, bowtie diagrams and datasheets in a consolidated format. Datasheets are prepared for each MEE, which includes the hazard description, hazard management, emergency response, ALARP summary and a list of critical barriers identified on the bowties (known as Safety and Environment Critical Elements [SCEs]).

Potential common causes that contribute to MEEs, or that can result in failure or degradation of the controls in place to protect against MEEs, include some generic mechanisms of SCE failure and generic human error. These are represented in bowties applicable to multiple MEEs. The generic SCE failure bowtie illustrates the causes, outcomes and controls in place to manage potential failure mechanisms. Human errors are managed via the WMS. The Generic Human Error bowtie is included in the MEE Register.

2.5.5 Safety and Environment Critical Elements and technical performance standards

Woodside identifies and manages SCE technical and management system performance standards in accordance with process safety management procedures, risk management procedures and change management procedures (further described in the implementation strategy in Section 7). SCEs are identified for MAEs and MEEs. An SCE is a hardware control, the failure of which could cause or contribute substantially to, or the purpose of which is to prevent or limit the consequence of a MAE, MEE or process safety event. In addition, Woodside defines safety and environment component equipment as an item of

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equipment or structure forming part of a hardware SCE that supports the SCE in achieving the safety function.

Once each SCE is selected, technical performance requirements are developed in accordance with the SCE management procedure and form the SCE Technical Performance Standards. These standards are a statement of the performance required of an SCE (e.g. functionality, availability, reliability, survivability). They are used to establish agreed assurance tasks for each SCE, support the management of operations within acceptable safety and/or environment risk levels, and ensure continuous management of risk to ALARP. An assurance task is an activity carried out by the operator to confirm that the SCE meets, or will meet, its SCE performance standard. Examples of assurance tasks include inspection routines, maintenance activities, test routines, instrumentation calibration, and reliability monitoring.

SCE Technical Performance Standards do not always align directly with EPSs. They are used in conjunction with the WMS to identify and treat potential step-outs from expected controls performance or integrity envelopes and ensure SCE performance can be optimised. Woodside's HSE Event Reporting Guideline describes the process for identifying 'damage to SCEs', which is an SCE failure presenting a risk level that requires immediate control actions be put in place to manage increased current risk. For applicable SCEs, 'damage to SCE' failures represent scenarios that may fail to achieve an EPS presented in this EP.

Section 6 of this EP presents the results of the MEE classification and analysis. More detail on the SCE and performance standards process, and the interrelationships to other parts of the SCE management procedures, is described in Section 7.

2.5.6 Safety-critical management system barriers

For each MEE, safety-critical management system specific measures are also identified. These are management system components (generally WMS processes) that are key barriers to, or measures for, managing MEEs.

2.6 Impact and risk evaluation

In accordance with Environment Regulation 34(a), 34(b), 34(c) and 21(5)(b), Woodside applies the following process to demonstrate ALARP and acceptability for environmental impacts and risks, appropriate to the nature and scale of each impact or risk.

2.6.1 Demonstration of 'as low as reasonably practicable'

The descriptions in Table 2-5 articulate how Woodside demonstrates that each impact and risk identified within this EP is ALARP.

Table 2-5: Summary of Woodside's criteria for 'as low as reasonably practicable' demonstration

Risk	Impact	Decision type
Low and Moderate (C, D, E or F level consequence)	***No Lasting Effect, Localised and Low Level, or Minor (D, E or F)***	***A***
Woodside demonstrates these impacts, risks and decision types are reduced to ALARP if: • identified controls meet legislative requirements, industry codes and standards, applicable company requirements and industry guidelines, or • further effort towards impact/risk reduction (beyond using opportunistic measures) is not reasonably practicable without sacrifices that are grossly disproportionate to the benefit gained.		
High, Very High or Severe (A or B level consequence)	***Moderate and above (C, B or A)***	***B and C***
Woodside demonstrates these higher-order risks, impacts and decision types are reduced to ALARP where it can be shown good industry practice and RBA have been employed, if legislative requirements are met, societal concerns are accounted for, and the alternative control measures are grossly disproportionate to the benefit gained.		

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2.6.2 Demonstration of acceptability

The descriptions in Table 2-6 articulate how Woodside demonstrates how each impact and risk identified within this EP are acceptable.

Table 2-6: Summary of Woodside's criteria for acceptability

Risk	Impact	Decision type
Low and moderate (C, D, E or F level consequence)	***No lasting effect, localised and low level or minor (D, E or F)***	***A***
Woodside demonstrates these lower order impacts, risks and decision types are 'broadly acceptable' if they meet the ALARP requirements for lower order risks and impacts described above (Table 2-5).		
High, very high or severe (A or B level consequence)	***Moderate and above (C, B or A)***	***B and C***
Woodside demonstrates these higher-order risks, impacts and decision types are 'acceptable if ALARP' if it can be demonstrated using good industry practice and RBA, if legislative requirements are met and societal concerns are accounted for and the alternative control measures are grossly disproportionate to the benefit gained. In undertaking this process for moderate and high risks, Woodside evaluates: • the principles of ESD as defined under the EPBC Act • the internal context – the proposed controls and consequence/risk level are consistent with Woodside policies, procedures and standards • the external context – consideration of the environment consequence and stakeholder acceptability are considered • other requirements – the proposed controls and consequence/risk level are consistent with national and international industry standards, laws and policies and consideration of applicable plans for management and conservation advices, conventions and significant impact guidelines (e.g. MNES). Additionally, very high and severe risks require 'escalated investigation' and mitigation. If after further investigation the risk remains in the very high or severe category, the risk requires appropriate business engagement with increasing involvement of senior management in accordance with Woodside's Risk Management Procedure to accept the risk. This includes due consideration of regulatory requirements.		

2.7 Recovery plan and threat abatement plan assessment

To support the demonstration of acceptability, a separate assessment is undertaken to demonstrate that the EP is not inconsistent with any relevant recovery plans or threat abatement plans (Section 1.8.2.1). This assessment follows the following process:

- identify relevant listed threatened species and ecological communities (Section 4.4)
- identify relevant recovery plans and threat abatement plans (Section 6.10)
- list all objectives and (where relevant) the action areas of these plans and assess whether these objectives/action areas apply to government, the titleholder, and the Petroleum Activity (Section 6.10)
- for those objectives/action areas applicable to the Petroleum Activity, identify the relevant actions of each plan, and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action (Section 6.10).

2.8 Environmental performance objectives/outcomes, standards and measurement criteria

The Environment Regulations define environmental performance outcomes (EPOs) to mean: "a measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level". As such, the process of defining an appropriate EPO, has relied on the required levels of performance set either in:

- legislation (such as the OPGGS Act)
- regulator guidance notes such as the Matters of National Environmental Significance – Significant Impact Guidelines (DoE 2013), or

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- specific agreements or expectations with other relevant persons (e.g. fishers or other marine users).

For each evaluated impact and risk, controls adopted during the ENVID and through demonstrating ALARP are paired with activity-specific EPOs, environmental performance standards (EPSs) and measurement criteria (MCs). EPOs, EPSs and MCs form the basis for monitoring and auditing and allow Woodside's environmental performance to be measured through the implementation of this EP to ensure impacts and risks will be managed to a level that is ALARP and acceptable. EPOs, EPSs and MCs are defined for each identified credible impact and risk in Section 6**.**

EPs for petroleum activities submitted following the OPP process are required to include EPOs that are aligned with those established in the OPP. The EPOs presented in a subsequent EP are not required to be identical to those in the OPP, however, they should achieve the same environmental outcome (or better). Activity-specific EPs will also be required to contain MCs and performance monitoring, auditing and reporting processes relating to the EPOs.

2.9 Implement, monitor, review and report

An implementation strategy for the Petroleum Activity describes the specific measures and arrangements to be implemented for the duration of the program. The strategy is based on the requirements of the Environment Regulations, and demonstrates:

- control measures are effective in reducing the environmental impacts and risks of the Petroleum Activity to ALARP and acceptable levels
- EPOs and EPSs set out in the EP are met through monitoring, recording, auditing, managing non-conformance, and reviewing
- all environmental impacts and risks of the Petroleum Activity are periodically reviewed in accordance with Woodside's risk management procedures
- roles and responsibilities are clearly defined, and personnel are competent and appropriately trained to implement the requirements set out in this EP, including in emergencies or potential emergencies
- arrangements are in place for oil pollution emergencies, to respond to and monitor impacts
- environmental reporting requirements are met, including 'reportable incidents'
- appropriate consultation is undertaken throughout the activity.

The implementation strategy is presented in Section 7.

2.10 Stakeholder consultation

Woodside undertakes consultation in the course of preparing EPs. The consultation, along with the process for ongoing engagement and consultation throughout the activity, is presented in Section 5. Copies of the full text of initial consultation correspondence are provided in Appendix F.

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3. DESCRIPTION OF THE ACTIVITY

3.1 Overview

This section has been prepared in accordance with Regulation 21(1) of the Environment Regulations. It outlines the activities to be undertaken as part of the Petroleum Activity described in this EP. The section includes the location of the activity, general details of the facility layout, the operational details of the activity, and other relevant information necessary for assessing potential environmental impacts and risks.

The GWA facility produces dry gas and condensate from a series of reservoirs via associated subsea infrastructure. These fluids are initially processed before being exported via the interfield line (IFL) to the Karratha Gas Plant (KGP) for further processing. The facility was originally commissioned as an integrated platform supporting drilling, production, utilities, and accommodation. However, the GWA facility no longer has drilling capability, and drilling activities are not included within the scope of this EP. An overview of the Petroleum Activity is provided in Table 1-1.

Table 3-1: Petroleum activity overview

Item	Description
Production Licence Areas	WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L, WA-7-R
Pipeline Licences	WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL, proposed Wilcox pipeline licence (application under assessment)
Platform Location	Latitude: 19° 39’ 07” south Longitude: 115° 55’ 47” east
Water Depth (Lowest Astronomical Tide (LAT)) at GWA topsides location	131 m
End of Field Life (EOFL)	EOFL is between 2036-2040*
Key components of platform facilities	Fixed platform, processing equipment, platform wells and utilities
Key components of subsea infrastructure	Subsea wells, Xmas trees, manifolds, flowlines/pipelines and umbilicals
Vessels	Platform support vessels, subsea support vessels, accommodation support vessel and heavy lift vessels.
Key activities	• routine production • routine IMMR of the platform and associated subsea infrastructure • well clean-up and commissioning • platform well intervention, workovers and well kill activities • non-routine and unplanned activities and incidents associated with the above

**Current decommissioning planning for the GWA facility is based on provisional Cessation of Production (CoP) of ~2036. For emissions forecasting purposes, CoP has been extended beyond current decommissioning planning estimates to support conservative long-term emissions assessment scenario based on EOFL in 2040.*

3.2 Location

The GWA facility is located in Commonwealth waters on the NWS of WA within licence areas WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L, WA-7-R, WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL, and proposed Wilcox pipeline licence. The GWA platform stands in approximately 131 m of water and is situated approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC) (Figure 3-1).

The GWA platform and associated infrastructure is marked on nautical maps. The platform is surrounded by a 500 m petroleum safety zone (PSZ). The coordinates, water depths, and petroleum titles associated with subsea infrastructure locations within the Petroleum Activity are presented in Table 3-2.

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Table 3-2: Coordinates, water depths, and petroleum titles for the GWA platform and associated subsea infrastructure

Infrastructure	Water depth (approx. m LAT)	Latitude (WGS84)	Longitude (WGS84)	Petroleum title(s)
GWA platform	131 m	19° 39’ 07.936” S	115° 55’ 47.028” E	WA-5-L
Existing subsea infrastructure				
19 platform wells	131 m	19° 39’ 07.936” S	115° 55’ 47.028” E	WA-5-L
IFL - GWA	130 m	19° 39' 07.332" S	115° 55' 48.509" E	WA-2-PL
IFL - NRA SSIV	124 m	19° 35’ 06.290” S	116° 08’ 15.023” E	WA-2-PL
Echo Yodel (EY) pipeline – GWA platform [1]	130 m	19° 39’ 06.644” S	115° 55’ 47.670” E	WA-9-PL
Echo Yodel (EY) pipeline – wellhead 1	133 m	19° 44’ 43.310” S	115° 44’ 11.401” E	WA-9-PL
PoG pipeline – GWA platform	130 m	19° 39’ 06.831” S	115° 55’ 47.875” E	WA-13-PL
PoG pipeline – wellhead	127 m	19° 31’ 11.736” S	116° 06’ 39.297” E	WA-13-PL
GWF1 pipeline – GWA platform	130 m	19° 39’ 06.933” S	115° 55’ 48.327” E	WA-24-PL
GWF1 pipeline – manifold	111 m	19° 45’ 44.068” S	115° 53’ 24.368” E	WA-24-PL
GWF2 pipeline – GWA platform	130 m	19° 39’ 04.207” S	115° 55’ 41.211” E	WA-27-PL
GWF2 pipeline – LPA manifold	~78 m	19° 49' 42.577" S	115° 39' 29.810" E	WA-27-PL
New GWF4 subsea infrastructure[2]				
GWF4 pipeline - Wilcox manifold	~74	19°59'48.35" S	115°30'02.71" E	Proposed Wilcox pipeline licence
GWF4 pipeline – LPA PLET	~78	19°49'47.04" S	115°39'25.55" E	Proposed Wilcox pipeline licence
New GWF4 production wells (subsea)[2]				
WCA01	~74	19° 59’51.396” S	115° 29’57.696” E	WA-7-R
WCA02	~74	19° 59’49.769” S	115° 29’57.7111” E	WA-7-R
YOD05	~131	19° 45’00.497” S	115° 43’49.734” E	WA-24-L
ESA01	~126	19° 45’20.342” S	115° 45’27.629” E	WA-24-L
TPA04	~112	19° 45’49.5400” S	115° 53’26.051” E	WA-5-L
Future tie-in production wells (subsea)[2]				
TBC1	~125	19°42’20.5892” S	115°52’20.0024” E	WA-5-L
TBC2	~124	19°40’51.158” S	115°55’26.379” E	WA-6-L
Production wells (subsea)				
GDA03	125 m	19° 43' 04.890" S	115° 51' 58.911" E	WA-5-L
GDA04	125 m	19° 42' 35.697" S	115° 53' 14.475" E	WA-5-L

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Infrastructure	Water depth (approx. m LAT)	Latitude (WGS84)	Longitude (WGS84)	Petroleum title(s)
GDA05	125 m	19º 43' 15.968" S	115º 51' 10.743" E	WA-5-L
PER01	131 m	19° 33’ 22.460” S	116° 02’ 06.799” E	WA-1-L
PER03	130 m	19° 35’ 29.270” S	116° 02’ 33.259” E	WA-1-L
GDA01	125 m	19° 42’ 24.097” S	115° 52’ 33.203” E	WA-5-L
GDA02	125 m	19° 42’ 24.097” S	115° 52’ 33.203” E	WA-5-L
TPA01	200 m	19° 45' 44.652" S	115° 53' 25.253" E	WA-5-L
TPA02	200 m	19° 45’ 44.996” S	115° 53’ 23.982” E	WA-5-L
TPA03	113 m	19° 45’ 43.618” S	115° 53’ 23.986” E	WA-5-L
LPA01	77 m	19° 49' 46.337" S	115° 39' 29.415" E	WA-57-L
LPA02	77 m	19° 49' 46.453" S	115° 39' 27.558" E	WA-57-L
LPA03	77 m	19° 49' 45.485" S	115° 39' 28.597" E	WA-57-L
SRA01	93 m	19° 47' 38.715" S	115° 46' 25.485" E	WA-24-L
SRA02	93 m	19° 47' 39.845" S	115° 43' 24.273” E	WA-24-L
KDA01	122 m	19° 45' 27.547" S	115° 47' 07.026” E	WA-5-L
KDA02	122 m	19° 45' 27.547" S	115° 45' 08.228" E	WA-5-L
DOA01	130 m	19° 43' 00.124" S	115° 48' 55.179" E	WA-6-L
Production wells (shut in)				
PER02[3]	127 m	19° 31’ 11.700” S	116° 06’ 39.350” E	WA-1-L
PER04[3]	128 m	19° 31’ 06.500” S	116° 05’ 53.639” E	WA-1-L

NOTES:

1 – Echo Yodel (EY) pipeline is suspended and isolated. Activities associated with decommissioning are provided for under the approval of the Echo Yodel Subsea Decommissioning EP (NOPSEMA Doc ID A830461).Maintenance continues under this EP until decommissioning activity is complete.

2 – These are approximate locations based on current engineering designs for GWF4 and future tie-in production wells.

3 – PER02 and PER04 wells are production wells no longer in use (i.e. shut in and designated redundant). Further detail is provided in Section 7.3.4.2.

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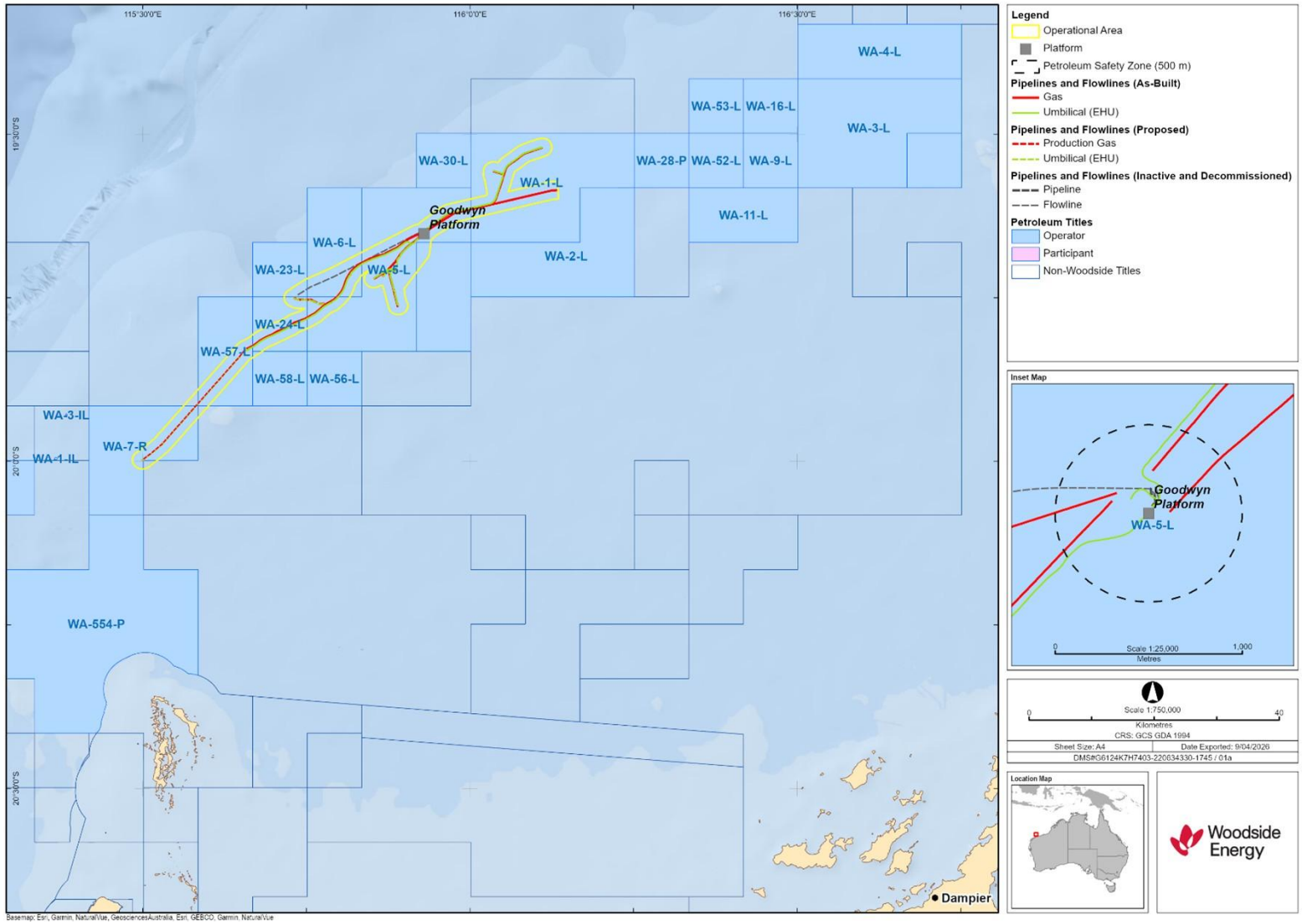


Figure 3-1: GWA facility and Operational Area

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3.3 Operational Area

The Operational Area defines the spatial extent of the Petroleum Activity including all vessel-related petroleum activities within its boundary (Figure 3-1). The area includes:

- GWA platform and an area within a 500 m (PSZ) of the platform
- a 1,500 m area around the IFL from GWA to NRC (NRA SSIV) covered by Pipeline Licence WA-2-PL
- a 1,500 m area around the EY pipeline covered by Pipeline Licence WA-9-PL
- a 1,500 m area around the PoG subsea infrastructure, including the PoG pipeline (covered by pipeline licence WA 13 PL), four wells (PER01, PER02, PER03, PER04), umbilicals, jumpers and spools
- a 1,500 m area around the GWF1 subsea infrastructure, including the GWF1 pipeline (covered by pipeline licence WA-24-PL) back to GWA, five wells (GDA01, GDA02, TPA01, TPA02, TPA03), umbilicals, jumpers and spools
- a 1,500 m area around the GWF2 subsea infrastructure, including the GWF2 pipeline (covered by pipeline licence WA-27-PL), eight wells (LPA01, LPA02, LPA03, SRA01, SRA02, KDA01, KDA02, DOA-01), umbilicals, jumpers and spools
- a 1,500 m area around the GWF3 subsea infrastructure, utilising GWF1 infrastructure (covered by pipeline licence WA-24-PL) back to GWA, three wells (GDA03, GDA04, GDA05), flowlines and umbilicals
- a 1,500 m area around GWF4 subsea infrastructure, including the Wilcox flexible flowline covered by the proposed Wilcox pipeline licence, and utilising GWF1 and GWF2 pipelines (covered by Pipeline Licence WA-24-PL and WA-27-PL, respectively), 5 wells (WCA01, WCA02, YOD05, ESA01, TPA04), umbilicals, jumpers and spools
- a 1,500 m area around two future tie-in production wells, utilising GWF1 infrastructure (covered by pipeline licence WA-24-PL), including umbilicals, jumpers and spools.

Vessel-related activities within the Operational Area will comply with this EP. Vessels supporting the Petroleum Activity operating outside the Operational Area (e.g. transiting to and from port) are subject to applicable maritime regulations and other requirements which are not managed under this EP.

3.4 Timing

The GWA facility commenced production in 1995. The facility operates 24 hours a day, 365 days a year.

Commissioning of GWF4 infrastructure is planned to commence in 2027 and 2028. The two future tie-in production wells that form part of the scope of this EP would be commissioned after GWF4 and may be tied back either concurrently or as a separate development. The current forecast EOFL of the GWA facility is between 2036 and 2040. The facility is expected to remain operational for the duration of this EP.

Other future tie-back opportunities are continuously being reviewed for Woodside's offshore facilities, which have the potential to extend the life of the facility. These, and any future decommissioning, well plug and abandonment or drilling will be the subject to a separate EP(s).

3.5 Facility layout and description

This section provides an overview of the GWA facility and associated infrastructure, as relevant to consideration of the environmental risks and impacts of the Petroleum Activity.

3.5.1 GWA topsides

The GWA topsides structure consists of 11 modules (Figure 3-2). The plan view covers an area of 4,000 m^2, extending approximately 120 m north to south and 55 m east to west. The production deck is situated 25 m above sea level, while the platform reaches approximately 175 m above sea level at the top of the flare tower. The accommodation module (Module D, designated temporary refuge) is located at the southern end of the platform and is segregated from the production systems by the utilities and drilling support modules.

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The product export pipeline riser is located at the northern end of the platform. Two A-frame pedestal cranes are used to service the platform and dropped object protection is provided at critical topsides and subsea locations.

The drilling derrick has been removed, and drilling systems are no longer operational. Residual or redundant drilling-related infrastructure may remain in place pending removal as part of future decommissioning or modification activities. Redundant equipment may be removed using a heavy lift vessel.

The following topside module designations have been used for the GWA facility as shown in Figure 3-2:

- module A: utilities area (located under drilling support module)
- module B: process area with module L stripping columns to the west face
- module C: wellheads (located under module G)
- module D: temporary refuge, including accommodation (located under helideck)
- module E: compression and flare tower area (located under module H)
- module F: drilling utilities/pipe deck
- module G: drilling facilities (located under Module K) (planned to be removed)
- module H: flare tower (on top of Module E)
- module K: drilling derrick (now fully removed)
- module L: stripping columns to the west of Module B
- module M: amenities building/store
- module X: module support frame.

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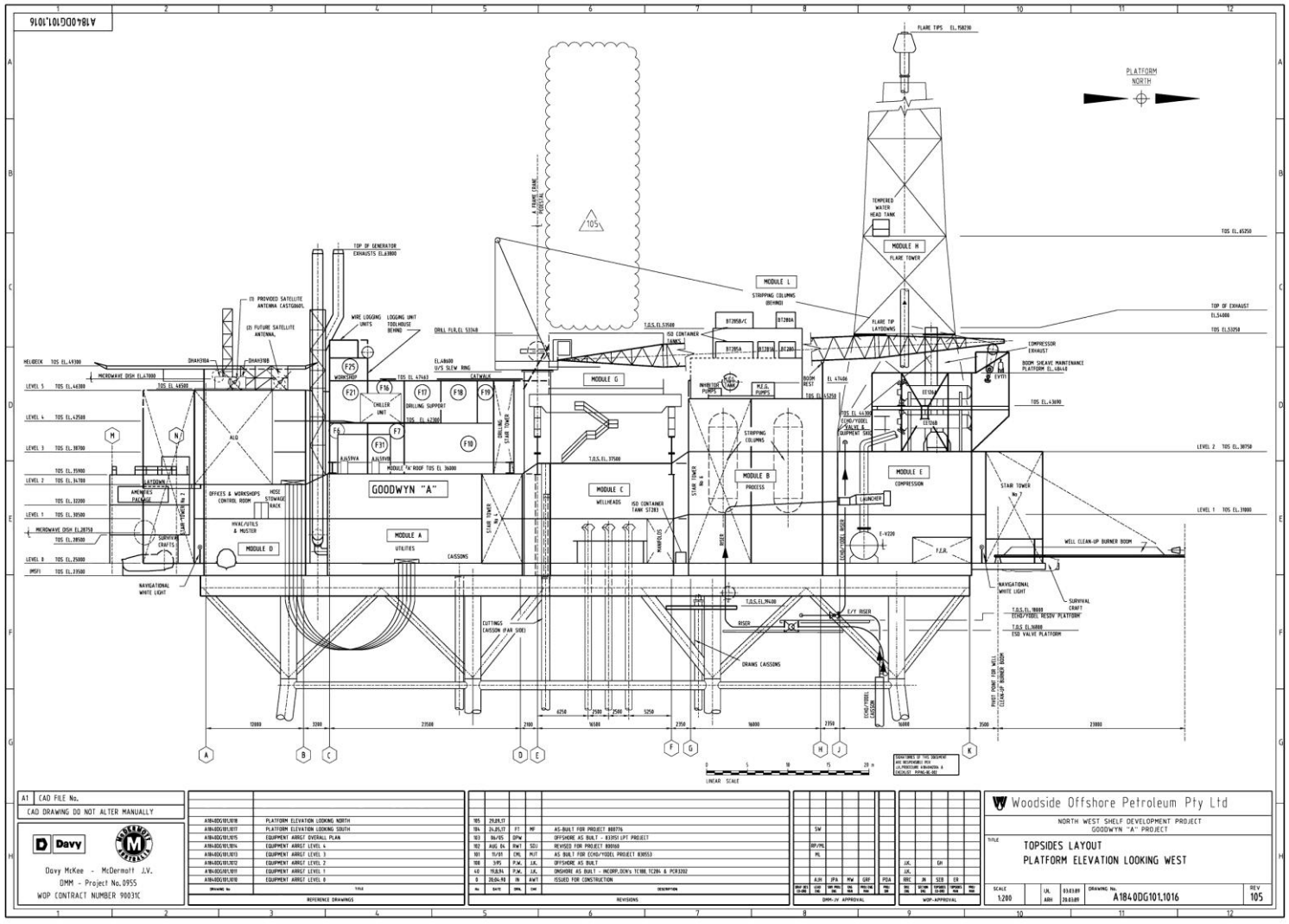


Figure 3-2: GWA platform topside module layout

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3.5.1.1 Topsides substructure

The GWA platform substructure provides structural support to the topside modules via an integral deck Module Support Frame. The GWA jacket is constructed from steel with pile foundations and includes conductors, caissons and J-tubes. It also incorporates supports and guides for risers, conductors, caissons and J-tubes and the IFL SSIV support frame (Figure 3-3).

The jacket is supported on four pile groups each consisting of five primary piles and four insert piles. Four of the five primary piles at each pile group were drilled and grouted with insert piles. The weight of the GWA jacket and piles are 12,984 and 17,698 tonnes (t), respectively.

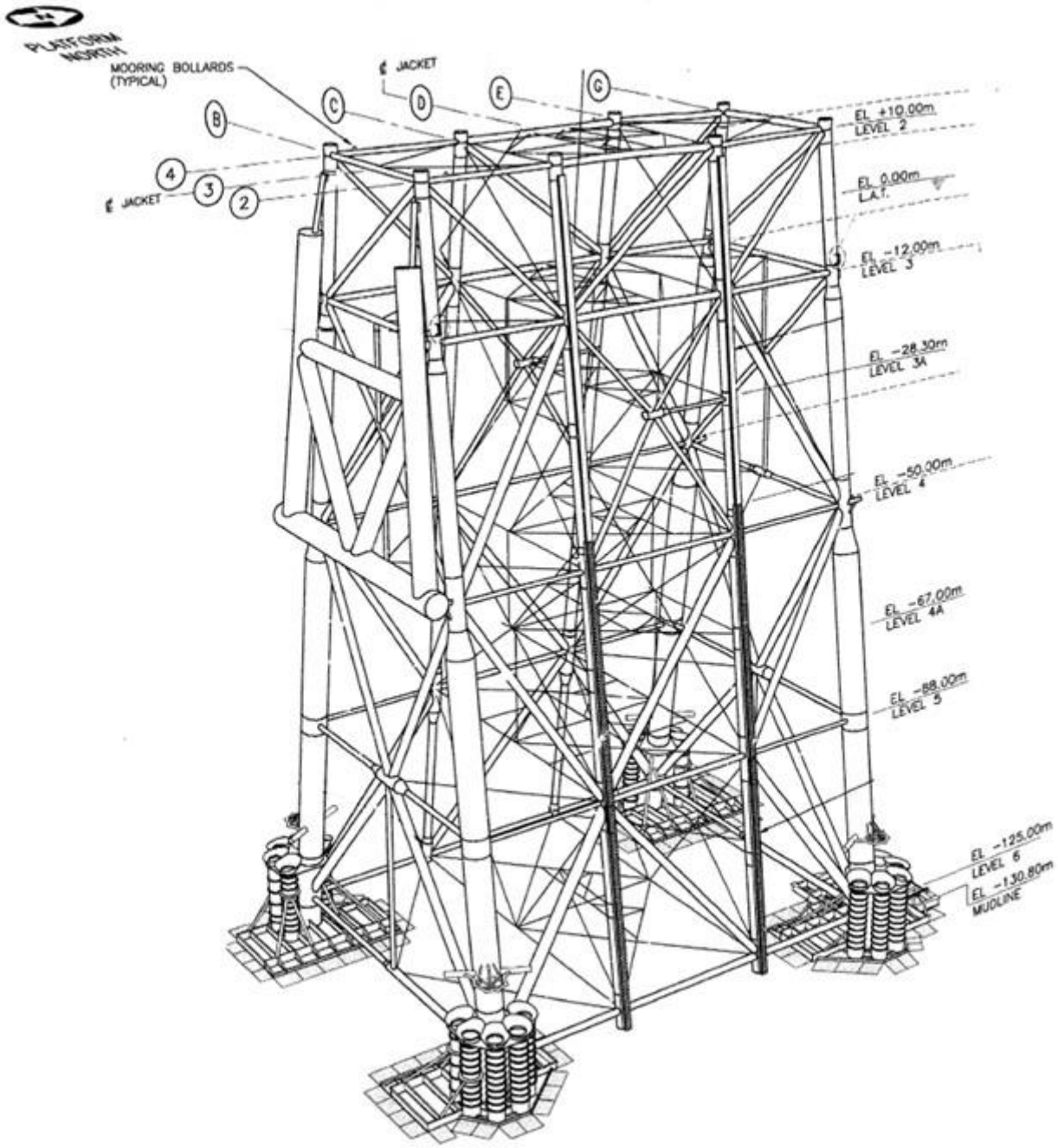


Figure 3-3: GWA substructure jacket general arrangement

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3.5.2 Subsea components

The subsea system is controlled from the GWA platform through the following components:

- jumpers and umbilicals which provide hydraulic and electric power, communications and chemical supplies between the platform and subsea components through a number of cables and tubes. Umbilicals run between the platform and the subsea distribution units (SDU) and umbilical termination assemblies (UTA), umbilical termination baskets (UTBs) and jumpers run between SDUs/UTAs/UTBs and the manifold
- valves which control subsea operations and processes
- chokes which control pressure and flow rates of hydrocarbons
- subsea control modules (SCM) and electrical distribution units (EDU) are sealed and pressure compensated electro-hydraulic units and link surface and subsea controls.

A number of subsea valves may also be overridden manually from either an ROV or divers.

The layout of the GWA facility subsea infrastructure is shown in Figure 3-4.

3.5.3 Interfield line

Gas and condensate are exported via the ~23 km IFL from GWA platform, which joins the second trunkline (2TL) near NRC. A pig launcher is provided for servicing the IFL. The launcher is designed for single launchings of spheres and for launching pipeline inspection tools. The pipeline/riser includes two key isolation valves. The riser emergency shutdown valve (RESDV) is located on the module support frame ESD valve platform and the subsea isolation valve (SSIV) is located on the jacket mud mat.

Concrete mattresses are provided to protect the IFL from dropped objects in the vicinity of the GWA platform. Protection frames are provided around the riser and SSIV.

3.5.4 Wells and reservoirs

3.5.4.1 Goodwyn

There are 19 platform wells on the GWA platform, accessing the Goodwyn field. Tubing retrievable sub-sea safety valves (SSSV) and wireline retrievable SSSVs are installed on GWA wells as the primary down-hole safety system. These valves are controlled from the surface via a single control line or independent control lines located approximately 550 m below the wellhead.

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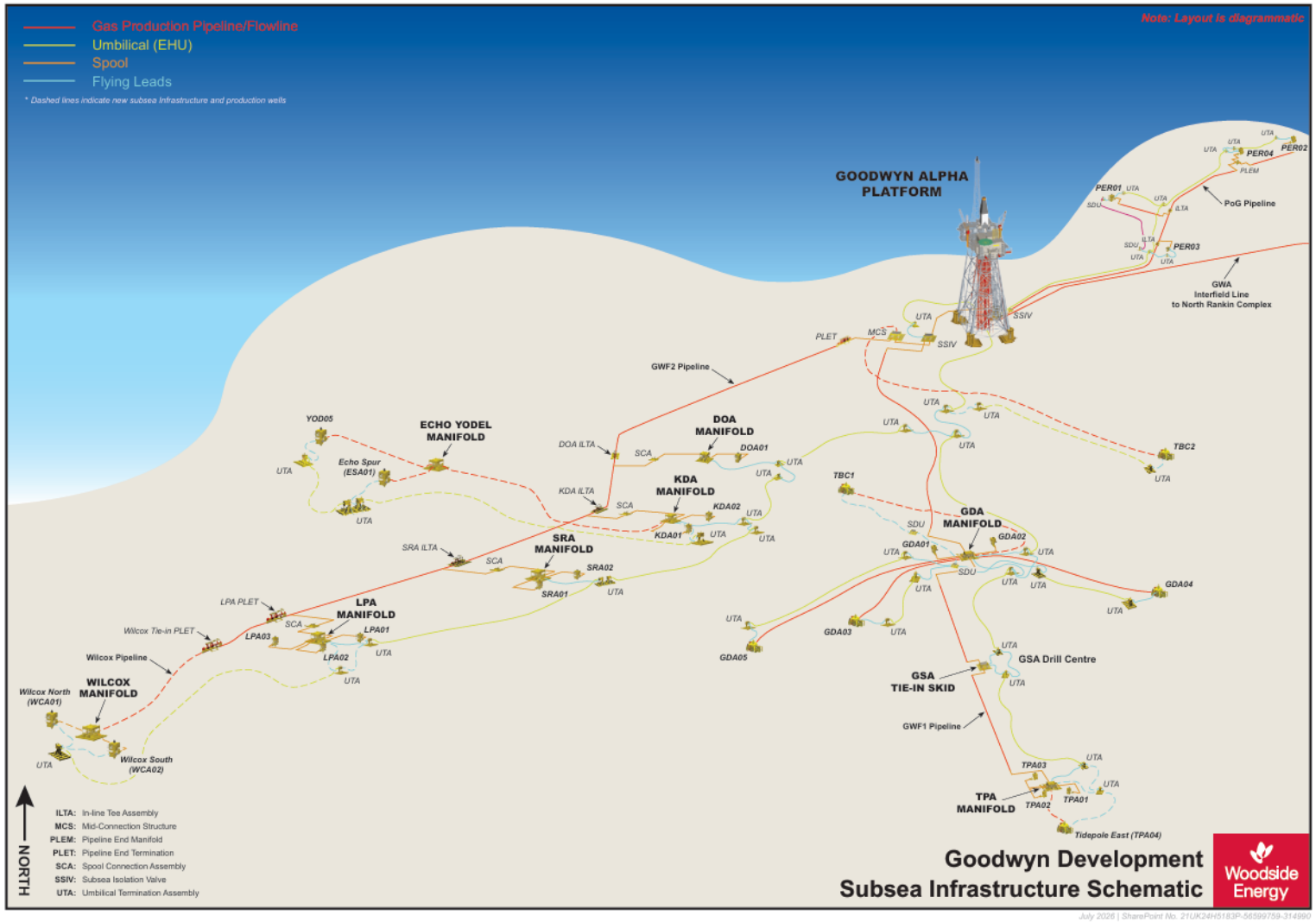


Figure 3-4: Schematic of the GWA facility subsea infrastructure

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3.5.4.2 Echo/Yodel

The Echo Yodel (EY) subsea wells have been permanently plugged and abandoned under previously accepted EPs, and the associated well infrastructure has been recovered. Decommissioning of the remaining EY pipeline will be completed under the Echo Yodel Subsea Decommissioning EP (NOPSEMA Doc ID A830461). Further information on Echo Yodel decommissioning and the management of redundant infrastructure is described in Section 7.3.4.1.

As part of the GWF4 development, two production wells (YOD05 and ESA01) are planned to be drilled in the EY reservoir and tied back to the existing KDA manifold.

3.5.4.3 Perseus/Searipple

Perseus over Goodwyn (PoG) subsea infrastructure comprises a pipeline, four wells (PER01, PER02, PER03, PER04), and associated umbilicals, jumpers and spools. Control and monitoring of the wells is undertaken via an electro-hydraulic umbilical (EHU) from the GWA platform. The subsea architecture allows for future extension of the PoG pipeline system through drilling and tie-in of additional wells.

Two wells (PER02 and PER04) are shut in and are designated as redundant, with plugging and abandonment planned under the accepted *NWS Phase 1 Plug and Abandonment and TPA03 Well Intervention EP* (NOPSEMA Doc ID A1282745). Pending abandonment, these wells remain in scope of this EP for inspection, monitoring and integrity management. Further information on the decommissioning associated with PER02 and PER04 is described in Section 7.3.4.2.

3.5.4.4 Wilcox

Wilcox subsea infrastructure will comprise the WCA01 and WCA02 wells, planned to be drilled under the GWF4 Drilling and Installation EP (NOPSEMA Doc ID A1327727), as well as a new flowline and associated manifolds, umbilicals, jumpers and spools (see Section 3.5.4.5 for more detail). Control and monitoring of these wells will be achieved via an EHU from the GWA platform.

The subsea architecture will be configured to allow for future expansion of the Wilcox system, subject on reservoir performance and operational requirements.

3.5.4.5 Greater Western Flank

The Greater Western Flank (GWF) developments are described below in terms of their functional integration with the GWA platform and subsea production system.

GWF1 subsea infrastructure comprises five wells within the Goodwyn (GDA01 and GDA02) and Tidepole reservoirs (TPA01, TPA02, TPA03). These wells are tied back to the GWA platform via a 16”, 16.3 km pipeline (GWF1 pipeline) which terminates at the GWF1 SSIV. The SSIV is connected by a series of spools to the GWF riser located in the centre of the platform and is protected from ship impact by the GWA jacket structure at depths below the ship-impact vulnerability threshold (approximately -12 m). In an emergency, the pipeline can be isolated from the riser using the SSIV, which is located on the seabed approximately 40 m from the platform.

GWF2 subsea infrastructure comprises eight wells (LPA01, LPA02, LPA03, SRA01, SRA02, KDA01, KDA02, DOA01) that tie in the Keast/Dockrell, Sculptor, Rankin and Lady Nora/Pemberton reservoirs. These wells are tied back to the GWA platform via a ~15 km pipeline (GWF2), which also terminates at the GWF1 SSIV.

The GWF3 subsea infrastructure accesses incremental volumes from the Goodwyn reservoir via existing GWF1 infrastructure. GWF3 infrastructure comprises three wells (GDA03, GDA04, GDA05), which are installed and tied back via the same GWF1 subsea infrastructure as GDA01 and GDA02.

GWF4 subsea infrastructure is planned to comprise:

- one additional Tidepole reservoir well (TPA04), tied back via the same GWF1 subsea infrastructure as TPA01, TPA02 and TPA03.
- two wells (YOD05 and ESA01) targeting the Echo/Yodel reservoir (described in Section 3.5.4.2), tied back to via the KDA manifold and 10” ID flexible jumpers to the existing GWF2 pipeline system which routes production to the GWF SSIV.

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- two wells (WCA01 and WCA02), described in Section 3.5.4.4, tied back to a new 2-slot Wilcox manifold (WCA) via 200 m long flexible jumpers. This manifold will be tied back to the LPA Pipeline End Termination (PLET) on the GWF2 pipeline. The WCA manifold will be connected to the Wilcox outlet FLET via the new 11” ID, 25 km Wilcox flowline.

Hydrocarbons from GWF4 will be comingled with GWF1 and GWF2 production and routed through the common GWF spools and riser for further processing at the GWA platform.

Two future tie-in production wells may be tied back to the GWA platform via the GWF1 SSIV, using similar flowline and umbilical configurations.

3.5.5 Field inventory

The infrastructure within the Operational Area is recorded and tracked using a database, which is updated as equipment is brought into title, including replacement equipment. As-found and as-left surveys are undertaken during installation or replacement of infrastructure using a remotely operated vehicle (ROV) to identify the location of items installed on the seabed. This data is then used to update the inventory for the title. Material items dropped to the marine environment and not recovered are also added to the inventory for the title.

An inventory of the key subsea infrastructure for the title areas relevant to this EP is provided in Section 7.3.3 Table 7-4 to Table 7-6 of this EP. Table 7-7 provides a list of infrastructure which is located within the title areas however outside the scope of this EP and covered under separate EPs. Decommissioning planning for infrastructure is described in Section 7.3.

New developments, including GWF4 and two future tie-in production wells, will include additional subsea infrastructure such as umbilicals, spools, jumpers and flowlines. Upon installation and commissioning, these assets will be incorporated into the titleholder's subsea infrastructure inventory.

3.6 Operational details

This section provides a detailed description of the main operations associated with the GWA facility, described under the following headings:

- crewing and modes of operation (Section 3.6.1)
- process description (Section 3.6.2)
- produced water system (Section 3.6.3)
- drainage systems (Section 3.6.4)
- utility systems (Section 3.6.5)
- lifting operations (Section 3.6.5.7)
- operational flaring (Section 3.6.7)
- diesel bunkering (Section 3.6.8)
- bulk hydrocarbon inventories (Section 3.6.9)
- operational chemical usage (Section 3.6.10)
- greenhouse gas emissions (Section 3.6.11).

3.6.1 Crewing and modes of operation

Total overnight personnel onboard (PoB) capacity for the GWA platform is 137 people. The central control room (CCR) is crewed 24 hours per day. Personnel numbers may vary depending on activities scheduled, such as:

- crew change
- engineering projects
- campaign maintenance

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- inspections/audits
- cyclone shutdown de-staffing
- planned facility shutdowns.

Modes of operations influence crewing levels and include:

- production and maintenance including subsea IMMR activities
- platform well management and maintenance (Section 3.9)
- GWF4 and future tie-in production well commissioning (Section 3.10)
- major projects
- remote operations
- subsea export.

These listed modes of operation may be concurrent.

3.6.1.1 Major projects

Major projects involve refurbishment, modification or major maintenance. The Projects function is responsible for undertaking these projects. Such projects may include, but are not limited to, the refurbishment, modification, replacement and/or removal of:

- Caissons and associated utilities
- HVAC
- Cranes
- Well conductors
- Compressors, such as required to enable low low pressure operations (LLPO).
- Laydown areas.

Potential environmental impacts related to projects are managed through the process outlined in Section 7.2.7.3.

3.6.1.2 Remote operations

The GWA platform is typically operated as crewed. However, Woodside may temporarily de-staff the platform (e.g. as a precautionary safety measure during severe cyclones). In such circumstances, operation of the GWA facility is maintained via the remote operations centre (ROC) at Woodside's Perth headquarters (Mia Yellagonga).

Whilst operating in remote mode, the GWA facility continues to produce at stable rates usually established prior to de-staffing. Operation at these stable rates maintains consistent production and minimises the potential for process upsets. During periods when personnel are not present onsite, activities requiring direct field intervention (e.g. manual valve operation) cannot be performed.

3.6.1.3 Subsea export

The IFL receives export gas and condensate from production trains T100 and T200, which is transported to 2TL near NRC. From here, gas and condensate are sent to KGP for onshore processing.

3.6.2 Process description

3.6.2.1 Production process

The GWA platform receives well fluids (gas, condensate and associated produced water) for topside processing via gas dehydration and condensate dewatering. Processed gas and condensate are exported onshore to the KGP.

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The GWA platform has two processing trains (T100 and T200). T100 operates with a capacity of approximately 19.3 kt/d of dry gas plus associated condensate. T200, operating in low-pressure mode, has demonstrated capacity of approximately 15.0 kt/d of export gas plus associated condensate.

Production from the GWF and PoG fields is processed using existing capacity. Under the current configuration, GWF production is routed to T100, while PoG and platform well production are routed to T200. As reservoir pressure declines over the life of the fields, additional compression is required to maintain gas export to KGP.

LLPO involves topsides modifications to enable processing of lower pressure reservoir fluids. These modifications include modified compression capacity, updates to process control systems, and adjustments to separation and utility systems to maintain stable and efficient operations. Far-field well tie-ins such as GWF4 will also require topsides modifications to accommodate reservoir composition and temperature variations

As part of the currently planned LLPO modifications (anticipated in 2028), the two production trains are planned to be reconfigured in series to optimise recovery and processing efficiency. Under the planned configuration, PoG and platform well production would be routed to T100, which would incorporate a low-low-pressure compressor (LLPC) to enhance recovery. GWF production would be routed to T200, where gas would be combined with compressed vapor from T100 prior to compression, dehydration and export via the IFL. Condensate from T100 would be routed to the suction side of the T200 export pumps for injection into the IFL.

The gas export compressor takes suction at lower operating pressures and returns the gas to export pressure for transport onshore via the pressurised pipeline. The export compression package (compressor, power generation turbine and associated equipment) includes the following:

- export compressor and aftercooler
- gas generator
- power turbine
- reduction gearbox
- lube oil systems
- dry gas seal system
- suction scrubber.

3.6.2.2 Flare systems

The GWA platform has two flare systems, the High Pressure (HP) Flare and the Low Pressure (LP) Flare. The primary purpose of the flare systems is to safely discharge gas streams during emergency depressurisation. There are, however, also several process streams that continuously pass gas to the flare, such as gas flashed from the produced water (PW) system, and stripping gas used in glycol regeneration. Stripping gas for glycol regeneration is sourced from the medium-pressure (MP) fuel gas system or the glycol flash drum.

Other streams may intermittently flow to the flare, such as during maintenance activities and when vessels are depressurised and purged.

The flow of gas through each of the HP and LP flare networks is measured using separate ultrasonic flow meters with pressure and temperature compensation. A small portion of the fuel gas stream is used for flare purge to exclude air from the flare system.

3.6.2.3 High pressure system

The HP flare system collects vented hydrocarbons from process and utility systems with design pressures of 1,000 kPa or greater. Hydrocarbons are vented to the HP flare from pressure safety valves (PSV), manual blowdowns and automatic blowdowns.

The main HP flare header is routed to the HP flare drum, which is designed to separate all liquid droplets by gravity. Liquids collected in the drum are pumped away to the oily water treatment system. Vapours from the

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flare drum are disposed of at the flare tip (located at the top of the 113 m tower) via a multi nozzle sonic flare tip.

3.6.2.4 Low pressure system

The LP flare system collects vented hydrocarbons from process and utility equipment with design pressures of 350 kPa or less.

There are two separate LP headers, one to accommodate low temperature relief streams and the other to accommodate venting at ambient or higher temperatures. The two LP headers are routed to the LP flare drum, which separates liquid by gravity.

Liquids collecting in the drum (typically condensed water from the glycol regeneration system) drain to the closed drains break drum. Liquids from the closed drains break drum are pumped to the oily water drains separator prior to reinjection into the main process stream, with water treated via the PW system.

3.6.3 Produced water system

Produced water (PW) is brought to the surface from the reservoir, separated out from hydrocarbons during the production process and discharged to the marine environment via the closed drains caisson, which discharges below the sea surface.

PW discharge rates may vary over time as high water cut wells are unloaded, cycled and produced, and are expected to increase as the fields mature. The PW system has been designed to process a maximum of 7,500 m^3/day.

3.6.3.1 Produced water system description

The PW system comprises lines that connect the process to the primary water/condensate separators, the PW degasser and to the closed drains (Figure 3-5).

The PW stream is primarily made up of:

- water recovered from the condensate stream by the primary water/condensate separators on T100 and T200
- a lesser quantity of water removed downstream by the condensate coalescers on T100 and T200
- water from the underflow of the oily water drains separator (OWDS). This is predominantly water from the glycol reboiler overheads, which is routed to the OWDS from the LP Flare knock out (KO) Drum.

The PW system directs all PW streams from the process areas to the PW degasser to remove dissolved gas and condensate before discharge via the hazardous closed drains caisson. Recovered condensate is skimmed from the surface of the degasser vessel liquids and returned to the process via the closed drain break drum. Any residual oil that accumulates in the hazardous closed drains caisson is skimmed from the water surface and pumped into an ISO container for onshore disposal.

Adsorbent hydrocarbon filters are installed on the GWA platform to remove dispersed oil from the PW stream. The system is used sparingly and primarily to manage oil-in-water (OIW) upsets.

An online analyser continuously monitors the OIW content. If the OIW content is within specification, PW is discharged via the hazardous closed drains caisson. In addition to continuous OIW monitoring, routine chemical characterisation and ecotoxicity assessments are undertaken on PW immediately upstream of the hazardous closed drains caisson, representing end-of-pipe discharge quality.

During production restarts following a planned shutdown, the GWA facility may experience elevated OIW levels due to mobilisation of emulsions within the PW system. These temporary increases in OIW can occur for up to three days after restart.

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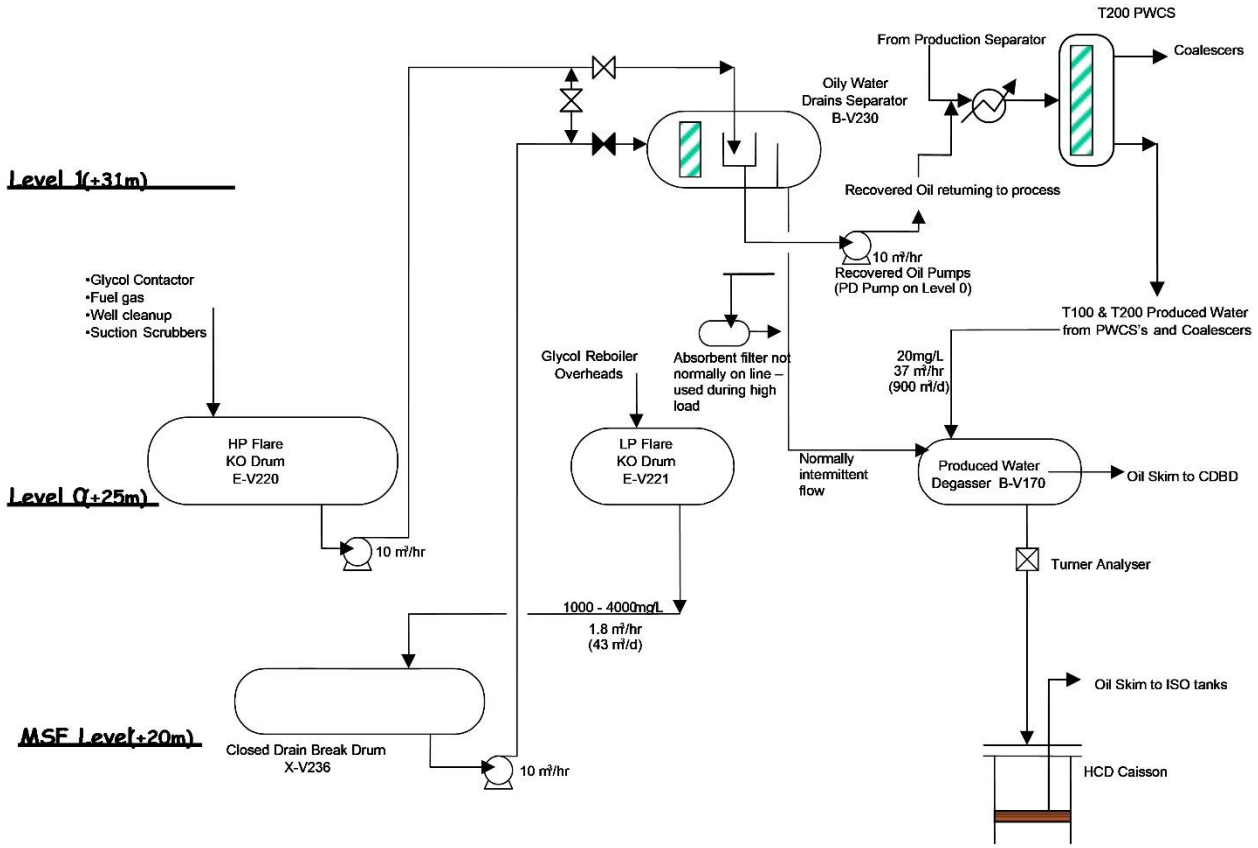


Figure 3-5: PW system configuration

3.6.4 Drainage systems

The open and closed drains system consists of both hazardous and non-hazardous open drains. The open drains system is required for disposal of water and hydrocarbons, which are at atmospheric pressure (e.g. deck water). Drains from hazardous areas are segregated from drains from non-hazardous areas to prevent ingress of gases into a non-hazardous area via the drains system.

3.6.4.1 Hazardous open drains

Operational process and non-process discharges, some maintenance activities discharges and potential spills contained within hazardous open drain system are routed to the hazardous open drains caisson. The drains collect spillage, process drainage, and washdown water from equipment/flooring and rain/deluge water from all areas designated as hazardous. Any hydrocarbons captured in the caisson are periodically pumped out/recovered. These drains originate from deck drains, tundishes and drip trays located in hazardous areas, principally in modules with large plated areas e.g. Modules B, E and L. Hazardous open drain sub-headers leaving a module are fitted with individual seal pots to segregate hazardous areas. The purpose of these seals is to limit the spread of gas from one module to another via the drains system.

The hazardous open drains caisson primary and back up instrumentation provide live visibility of calculated hydrocarbon inventories in the caisson to prevent underflow. Level instrumentation provides data linked to the control system, is historised and utilised to implement response actions. The hazardous open drains caisson is equipped with a sump pump to recover any hydrocarbons which may accumulate in the caisson over a period. These liquids are routinely pumped into a waste oil ISO container for disposal onshore. The pump is manually started and runs until seawater is observed at the sample point discharge. The sample line is located near the waste oil ISO container and leads to a tundish. Under routine conditions, the caisson is pumped out once per week. Non-routine flow conditions to the drain system (depending on process drainage and maintenance activities) may lead to the caisson being pumped out more frequently.

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3.6.4.2 Non-hazardous open drains

Non-hazardous open drains cover the utility and power generation module (Module A). Operational non-process discharges, maintenance activities, washdown water and potential non-hazardous area spills are routed to the non-hazardous open drain system. The main sources for potential unplanned spillage of hydrocarbons are limited to:

- firewater pumps
- emergency generator
- gas turbine power generators (lube oil)
- diesel day tanks for gas turbines.

The above equipment is provided with valved drip trays. Any lube oil drained down from machinery is collected in dedicated transportable containers. The main non-hazardous open drains collection system is routed directly overboard to allow for rainfall/washdown/deluge flows and for safety purposes.

3.6.4.3 Closed drains

The process closed drains system is used for draining volatile hydrocarbon liquids from all process equipment. The drained liquids are routed to the closed drains break drum, which is located below deck in the module support frame. From here, the liquids are pumped to the oily water drains separator for further treatment. Closed drain piping systems are classed as topsides pressure containing/hazardous pipework.

Hydrocarbons recovered from the closed drains system and liquids collected in the HP flare drum are also sent to the oily water drains separator. From the OWDS, recovered hydrocarbons are pumped into the process trains whilst water is routed to the PW degasser. Hydrocarbons are then processed as per the process description in Section 3.6.3, which ultimately leads to the IFL. The closed drains caisson forms part of the closed drain system used for PW disposal outlined in Section 3.6.4.

3.6.4.4 Drilling facility hazardous open drains

Currently, the drilling hazardous open drains system collects rainwater and wash down water and directs the flow to the hazardous open drains caisson. It also collects and drains drill water from the deluge systems during wet testing or any real events.

3.6.5 Utility systems

3.6.5.1 Platform lighting

The GWA platform has appropriate lighting to ensure a safe working environment to support 24-hour operations. Lighting is split between emergency and normal lighting. Approximately 30% of platform lighting is powered from the emergency generator supply in the appropriate module. The remainder is fed from the normal supply. The emergency light fittings have been located to illuminate the designated escape routes on the facility. There are also battery backed-up emergency lights on the platform.

There are navigational lights on the platform flare tower and on the booms and towers of the pedestal cranes. Helideck lighting is also provided to assist helicopter landing.

Unless required to support over-the-side activities (such as refuelling and lifting operations), lighting on the platform is directed to the work area, which aids in limiting light spill to sea.

3.6.5.2 Heating ventilation and air conditioning system

The heating, ventilation and air conditioning (HVAC) system comprises HVAC equipment, ductwork and associated pipework. It provides independent and inter-dependent subsystems with pressurised, conditioned, purge and exhaust air services to various areas including accommodation, and various modules which can be operated on as required basis and others on a continuous basis.

Ozone-depleting substances (ODS) are no longer used and refrigerants associated with the HVAC system are managed by a licenced refrigerant authority.

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3.6.5.3 Seawater treatment systems

3.6.5.3.1 Seawater system

The primary function of the seawater system is to provide process and HVAC cooling. Secondary, continuous users are the fire ring main pressurisation, electro-chlorination unit, caisson spillback lines and open drains seal pot water make-up.

Seawater is supplied by three shaft driven seawater lift pumps enclosed within protective caissons. An auxiliary totally submersed seawater lift pump supplies seawater for essential HVAC cooling, fire ring main pressurisation and chlorination requirements, when the main pumps are unavailable. It is also used for initial priming of the entire seawater system, prior to startup of the main pumps, in a black start situation.

Filtration of seawater to the condensate coolers is provided by two seawater filters located in the seawater to condensate cooler supply line.

Four seawater/tempered water plate heat exchangers transfer heat from the closed-circuit tempered water system. Seawater is also used as the cooling medium for the HVAC tempered water plate heat exchangers.

The seawater from both sets of heat exchangers, as well as other users, is routed by a collection system to the seawater dump caisson and then returned to the ocean. To prevent marine growth within the seawater system, an electrochlorination unit generates a concentrated sodium hypochlorite solution for injection into the circulation system, at a target chlorine level of 0.5 ppm. The seawater pump operates at 4,275 m^3 per hour with an average discharge temperature of 32°C.

3.6.5.3.2 Tempered water system

The tempered water system has the principal function of providing cooling for the well stream in the T100 and T200 production coolers and cooling gas downstream of the export compressor in the export compressor after cooler.

The system also provides subsidiary cooling in the following areas:

- stripping gas compressor lube and seal oil systems
- export compressor lube oil system
- glycol regeneration trim coolers
- drill water transfer pump recycle cooler
- auxiliary equipment room (AER) HVAC.

Two of three tempered water pumps are used to circulate inhibited fresh water within the closed system. Tempered water is not used for condensate cooling as the temperature difference between tempered water and the required condensate outlet temperature is inadequate. Cooling of the heated tempered water returning from its users is achieved by the use of seawater/tempered water heat exchangers.

The tempered water carbon steel piping and vessels are protected from internal corrosion by dosing the water with a corrosion inhibitor. Regular testing of the tempered water system is undertaken to ensure the correct concentration of corrosion inhibitor is maintained. Periodic maintenance may require the draining of the tempered water system, resulting in the discharge of water and residue corrosion inhibitor to the marine environment.

To better manage incoming fluids and temperature variations from far-field wells, the facility will incorporate two additional tempered water pumps to support the heating function of the T200 production cooler. This modification enables the tempered water system to heat incoming process fluids in the T200 production cooler by routing warm return tempered water from the EGC Aftercooler. As a result, the T200 production cooler can operate as a heater when required, helping suppress bubble point and prevent cavitation in the condensate export pumps.

3.6.5.3.3 Potable water

The reverse osmosis (RO) potable water maker unit is the primary means for potable water supply at GWA. The unit can produce 40 m^3/day of potable water. Chlorinated seawater from the sea water distribution header is fed into the RO water maker package. Within this package, the sea water pressure is boosted by a

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LP feed pump to maintain the required inlet pressure to the RO HP feed pump. Seawater passes through a media filter to remove coarse suspended solids, a carbon filter to remove chlorine and odour, and a cartridge filter to remove fine suspended solids. Anti-scalant is added and the seawater pressure boosted by the HP feed pump to pressurise the feed to the RO membranes. The seawater passes through the RO membrane separation units to produce potable water (permeate) and saline water (sent to the non-hazardous open drains system). The potable water then passes through a calcite filter to remineralise and into two potable storage tanks before being transferred out to the potable water distribution. The RO package includes a clean-in-place (CIP) system for periodic cleaning.

Brine from the RO plant is generally 55-60 parts per thousand salts, with approximately 75 m^3 of brine produced per day. Small quantities of anti-scaling and cleaning chemicals may also be discharged with the brine.

A secondary potable water supply is also available. The water is transported to the platform by a platform support vessel (PSV) and transferred into the potable storage tanks via a dedicated bunkering hose.

3.6.5.4 Power generation

The main power generation system consists of six gas turbine-driven generator (GTG) units (Solar brand). The generators supply 3-phase electrical power at 6.6 kilovolt and 50 Hertz to the high voltage power distribution system. The system provides power to all process, utility and support systems on the platform. All GTG units are capable of operating on fuel gas or diesel.

Implementation of LLPO will increase power demand to support compression, resulting in increased fuel gas use for power generation. Continuous operation of up to five GTGs is expected to be required to support compression, with one additional GTG maintained in cold standby to provide contingency power during planned maintenance activities or in the event of an unplanned outage. Reliability improvements have been implemented across the GTG fleet and associated control systems to support stable power generation, enhance operational redundancy, and minimise the potential for production interruptions.

The GTG units are supplemented by a battery energy storage system (BESS) and a load shedding system (LSS), installed to support the GTGs in the event of a trip. The BESS consists of a 1MWh capacity lithium-ion battery backup system located within a standalone container in Module F.

In the unlikely event of failure of the main generation system, an emergency diesel generator provides emergency power. The system starts automatically, connects to essential switchboard AM832 bus ‘A’, and maintains all essential and vital services. Essential services are those which, when failing in operation or when failing if called upon, affects the continuity, quality or the quantity of the product. Vital services are those which, when failing in operation or if called upon, can cause unsafe conditions of the process and/or electrical installation, jeopardise life or cause major damage to the installation.

In the event of an emergency generator failure, two 415 Volt, 50 Hertz, 120 kVA uninterruptable power supply (UPS) systems, each supported by independent battery banks, provide continued power to essential equipment safety systems. These include the fire and gas detection system, the emergency shutdown (ESD) system, and the production shutdown (PSD) system. The vital load power architecture ensures redundancy through multiple sources including the UPS, emergency power system and dedicated battery backup, enabling safe operation and controlled shutdown of critical systems during loss of main power.

3.6.5.5 Sewage and putrescible wastes

Sewage from the ablutions is disposed to ocean via the sewage caisson.

Putrescible waste (principally food scraps) is either ground to less than 25 mm diameter and disposed to ocean via the sewerage caisson or bagged and transported to shore for disposal as domestic waste.

3.6.5.6 Sand management

In 2012, desanding equipment was commissioned to provide the capability to intercept and remove sand particles from the well stream that feeds the production processing equipment of GWA T200 (LP train). This equipment eliminates the need for production shutdowns to remove sand deposition from process vessels. The desanding system consists of a desander, accumulator and transportable disposal vessels.

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The design basis for the equipment is to continuously collect sand in an accumulator on the platform and periodically transfer sand to one of two transportable disposal vessels for shipment and onshore disposal. The desander is capable of processing up to 500 kg/day sand.

3.6.5.7 Safety features and emergency systems

A range of safety features and emergency systems have been integrated into the design and operation of the GWA facility to manage safety risk and associated major environment risks. These include systems for fire and gas detection, emergency shutdown and firefighting.

Firefighting systems, including the helideck foam system, form part of the platforms safety management arrangements. There is no planned overboard discharge of chemicals associated with the testing of such emergency response systems. This includes the helideck fire suppression foam system, which is tested with water only.

The safety features and emergency measures in place are listed in the Goodwyn Alpha Operations Safety Case and, where relevant to the management of unplanned environmental impacts, safety features are described as controls in Section 6 of this EP.

3.6.6 Lifting operations

Two pedestal cranes are installed on the GWA platform, one on the east side and one on the west side. Both cranes feature an A-frame design and are powered by diesel engines. In addition, a beam-mounted electric hoist is located in Module A for the removal and installation of the seawater and fire water pumps. The hoist is being upgraded to a 20 t unit, with the supporting monorail strengthened accordingly.

3.6.6.1 Routine lifting from platform support vessels

Routine lifting operations primarily involve transferring stores and equipment from a support vessel to the facility. Lifts may be conducted using either of the main cranes, depending on weather conditions. Support vessels are equipped with dynamic positioning (DP) systems to maintain station during lifting operations.

The types of lifted equipment may vary but generally include containers or skips of various sizes. All stores and equipment required by the facility are secured inside the skip or container. Chemical supply containers are also routinely lifted, and all equipment is appropriately rated for offshore lifting.

Following the completion of offloading from the supply vessel, the facility backloads any items to be returned to shore to the supply vessel. These primarily include empty skips or containers or skips containing waste for onshore disposal.

3.6.6.2 Lifting around the facility

Once lifted to the lay down area, equipment may be re positioned to various locations throughout the facility for operational purposes. This includes lifting stores or equipment to different landing areas for unloading or use, moving waste bins to designated areas and relocating ISO containers to Module B.

Occasionally, non-routine equipment may require lifting. In such cases, the equipment is packed into a container or secured within an approved lifting frame.

3.6.7 Operational flaring

3.6.7.1 Normal operations

A relatively small quantity of gas is required to be continuously flared associated with purge and pilot of the flare system and disposal of waste streams which are not recovered to the process. The continuous flows to the LP flare are:

- flare pilot
- LP flare header and storage tank purges
- glycol regeneration process, including still column overheads and flash drum.

The continuous flows to the HP flare are:

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- HP Flare Pilot
- flash gas from glycol flash drums (which is under on/off level control)
- flash gas from PW degasser
- flash gas from scrubber vessels, including fuel gas, export compressor and the glycol contactor integral suction scrubbers (all under on/off level control)
- leakage past flare header valves such as pressure safety valves and blow-down valves (BDVs).

3.6.7.2 Intermittent process upsets and activities

There are intermittent gas streams to the flare during process upsets, maintenance activities, and when process systems are depressurised and purged. The flow of gas through each of the HP and LP flare networks is measured using ultrasonic flow meters with pressure and temperature compensation. The flares are equipped with pilots and a flame front generator and are continuously purged with fuel gas to avoid ingress of air into the system.

3.6.7.3 Emergency blowdown

The topsides equipment and piping are divided into isolatable sections, each with a dedicated BDV. During an ESD, each section is separately depressurized to the HP flare. Each section contains a fail-open actuated BDV that allow blowdown of the entire platform inventory. Based on operational experience and facility inventory, approximately 50–100 t of hydrocarbon gas may be flared during an ESD event.

3.6.7.4 Transient operations

The GWA process relies on warm operating temperatures (above 35°C for T100 and above 46°C for T200) to allow seawater cooling to prevent vapour breakout in the condensate processing train, and to meet a minimum inlet temperature of 32°C for the condensate stripping column (the operation of which is adversely affected by low temperatures).

During transient operations, such as restarting production from the PoG, GWF1, GWF2, GWF3 or GWF4 and two future tie-in production wells that form part of the scope of this EP, it may not be possible to meet the required GWA process operating temperature requirements. In this event, temporary flaring of vapour break-out from the condensate train may be required. When possible, cold production from the subsea flowlines is commingled with warm platform well production to reduce flaring.

3.6.7.5 Manual depressurisation

Manual depressurisation results in intermittent flaring of hydrocarbons, triggered by routine equipment maintenance, planned ESD testing and/or pressurisation of equipment and piping to remove the equipment from service. Equipment must be depressurised prior to draining, as the closed drains system is not intended for HP service.

3.6.7.6 Subsea flowline depressurisation

The fluid in the subsea flowlines/pipelines (which carry hydrocarbons from the subsea wells to the GWA platform) may on occasions need to be routed to the flare to allow the pressure in the flowlines to be reduced. The flowlines may require depressurisation for the following reasons:

- production flowline maintenance and critical Leak-off Testing (LOT)
- to facilitate remediation in the event of an unplanned hydrate blockage in the subsea flowlines
- flowline hydrate management
- manage flowline integrity limit
- suspension of redundant pipelines/flowlines.

3.6.7.7 Annual flared gas

The amount of gas that may be flared on an annual basis is dependent on continuous and intermittent process sources, planned activities requiring flaring, and unplanned process upsets. The reported annual

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mass of flared gas from routing and non-routine sources has ranged between approximately 10,000 and 15,000 t per year between FY22 and FY25 (Section 6.7.7).

3.6.8 Diesel bunkering

Low sulphur diesel is transferred in bulk to the GWA facility from supply vessels via the east and west bunkering stations. Diesel is filtered prior to entering the storage facilities in the east and west crane pedestals. It is then pumped to the filter/coalescer package for clean-up before distribution to the user areas. Diesel flow is metered and supplied through a continuously pressurised ring main. Any unused diesel is recycled back to the crane pedestals. Each user area is protected from diesel supply interruptions by dedicated break tanks. Diesel is required for:

- temporary equipment
- turbine generators (back up to fuel gas)
- emergency generator
- east and west cranes
- firewater pumps
- lifeboats.

3.6.9 Bulk hydrocarbon inventories

The main hydrocarbon inventories associated with major topside process equipment is presented in MEE-03 in Section 6.8.5. Non process inventories of hydrocarbons used on the GWA facility are outlined in Table 3-3.

Table 3-3: Bulk inventories of non-process hydrocarbons and chemicals

Material	Storage means	Storage capacity
Diesel	Diesel storage tanks (x2)	343 m^3 total (East crane pedestal 194 m^3, West crane pedestal 149 m^3)
Lube oil/seal oil/Hydraulic oil	Various size containers based on type and use	Various – general 20 L and 205 L drums and 1,000-4,000 L bulk containers

3.6.10 Operational chemical usage

Chemicals are utilised on the GWA facility for a variety of purposes and can be divided into two broad categories (operational and facility maintenance), as described below.

3.6.10.1 Operational process chemicals

A process chemical is the active chemical added to a process or static system, which provides functionality when injected in produced fluid, utility system streams or for pipeline treatment. These chemicals may be present in routine or non-routine discharge streams from the GWA platform. Examples include corrosion inhibitors, biocides, scale inhibitors, demulslifiers, glycols and hydrate inhibitors.

3.6.10.2 Operational non-process chemicals

Non-process chemicals include chemicals which do not fall into the category described above but which may be required for operational reasons and, by virtue of their use, may be intermittently discharged or have the potential to be discharged (e.g. required as a result of maintenance or intervention activities). Examples include subsea control fluids, dyes and well intervention/workover chemicals.

3.6.10.3 Non-operational chemicals

Non-operational chemicals include chemicals which are required for general maintenance or ‘housekeeping’ activities and are critical for overall maintenance of the facility and its equipment. These may include paints, degreasers, greases, lubricants and domestic cleaning products. They may also include chemicals required

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for specialty tasks, such as laboratory testing and analysis. Maintenance chemicals generally present negligible risk to the environment as they are not discharged as a result of their use (e.g. paint) or are used intermittently and discharged in low volumes (e.g. domestic cleaning products).

3.6.10.4 Indicative chemical inventories

An indicative list of bulk chemicals commonly used on the GWA facility, and estimated storage quantities, is summarised in Table 3-4. Other chemicals may be used on GWA in the future if chemical requirements change, for example, during GWF4 commissioning activities, there may also be a temporary well clean-up skid which may include water clarifiers. In addition to the chemicals listed, the GWA platform may also maintain other small volumes of various operational chemicals and non-operational chemicals as previously described.

Table 3-4: Indicative bulk inventories of chemicals

Material	Storage means	Storage capacity
Corrosion Inhibitor	Transportable containers from supplier (usually one connected, one on standby)	4 m^3 per container. Generally maximum 8 m^3.
Triethylene Glycol (TEG)	Glycol storage tank	23 m^3
MEG	2 x MEG storage tanks	30 m^3
Biocide	Stored in the Chemical Store on GWA.	20 L containers
Scale Inhibitor (provision for future use)	Transportable containers from supplier	1 m^3 per container.
Subsea Control Fluid	Hydraulic Power Unit Tank stores 'in use' fluid. Additional fluid stored in drums.	~2 m^3

3.6.11 Greenhouse gas emissions

The main sources of greenhouse gas (GHG) emissions associated with GWA production are shown in Table 3-5. GHG sources that are not part of the facility (e.g. onshore processing emissions) are included for completeness. However, the GWA facility does not import electricity and therefore there are no GHG emissions associated with purchase/acquisition of electricity.

In the context of this EP, the emissions are classified as direct and indirect emissions.

Table 3-5: Direct and indirect greenhouse gas sources from the GWA facility and supply chain

Emission type	Emissions source	Location	Jurisdiction	Process
Direct	Offshore processing	Offshore	Commonwealth	GHG emissions associated with gas / diesel turbines (Section 3.6.5.4), flares, fugitives, and process vents
Indirect	Support vessels and helicopters (on charter)	Offshore	Commonwealth	GHG emissions associated with internal combustion engines and fugitives on support vessels and helicopters
	Onshore processing*	Onshore	State	GHG emissions associated with venting reservoir CO_2, combustion of gas as fuel, flares and fugitives associated with processing gas to LNG, LPG, condensate and domestic gas
	Transport	Transit	Subject to consumer location	GHG emissions associated with transport of products to market, including regasification and distribution of LNG in customer markets
	Regassification, distribution and combustion by third party user.	Market	Subject to consumer location	GHG emissions associated with combustion of products as part of power generation and other energy solutions within the final market

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*ISO 19694:2021 defines indirect GHG emissions as GHG emission that is a consequence of an organisation's operations and activities, but that arises from GHG sources that are not owned or controlled by the organisation. For the purposes of this EP the "organisation" is the GWA facility and therefore onshore processing and support vessel operations are considered indirect emissions sources.

3.7 Subsea inspection, monitoring, maintenance, and repair activities

Subsea infrastructure, including the platform substructure, is designed to minimise the need for significant intervention. Inspection and maintenance are undertaken to maintain infrastructure integrity and identify potential vulnerabilities before they present a risk of loss of containment. Maintaining infrastructure integrity also supports decommissioning planning. Where required, intervention activities are undertaken to address identified issues.

Subsea IMMR activities are typically undertaken as discrete campaigns using subsea support vessels. Campaigns will generally operate continuously (24 hours per day) for the duration of the activity, with each campaign typically of short to medium duration (approximately 2 weeks to 1 month), depending on the scope and complexity of the work. These activities may occur at any time of year in accordance with operational requirements.

Vessels supporting IMMR activities may vary depending on operational requirements, vessel schedules, capability and availability. Maintenance and repair activities may require additional vessel time depending on the scale and complexity of the work scope; however, such activities are expected to be infrequent.

Subsea IMMR activities may utilise remotely operated vehicles (ROVs), autonomous underwater vessels (AUVs) and associated subsea equipment. ROVs may be fitted with tooling and specialist camera systems to support inspection, maintenance and repair activities and to record subsea infrastructure condition. For some activities, ROVs and AUVs may also be deployed from the GWA platform.

ROV operations also require temporary placement of tool baskets on the seabed. These typically have a mesh base with a footprint of approximately 15 m^2. Placement is temporary and baskets are recovered to the vessel at the completion of the activity.

The IMMR process for subsea infrastructure, including redundant equipment (Section 3.7.4), maintains equipment in serviceable condition for continued operations and supports future removal where required. Typical IMMR activities are described below.

3.7.1 Inspections

Inspection of subsea infrastructure is the process of physical verification and assessment of components in order to detect changes in location and condition relative to the as-installed state and previous inspections. Details of typical subsea infrastructure inspections/surveys and indicative frequencies are provided in Table 3-6.

The scope and frequency of subsea equipment (operational and redundant) and pipeline inspections are determined using a risk-based inspection (RBI) methodology and associated plans. RBI is widely used within the industry to determine inspection frequencies (Energy Institute 2009; DNV 2019).

Planned subsea inspections may include visual inspection of subsea infrastructure and confirmation of infrastructure condition. Inspection findings, including any evidence of minor subsea discharges, are recorded and managed in accordance with Woodside's subsea and pipelines integrity management processes.

Table 3-6: Typical subsea infrastructure inspections/surveys and frequencies

Type of inspection/survey	Subsea infrastructure	Purpose	Approximate frequency
General Visual Inspection	All subsea infrastructure, including exploration wellheads	Check general infrastructure integrity.	Varied – every 2-8 years
Close Visual Inspections	All subsea infrastructure	Investigate certain subsea infrastructure components.	Varied – every 2-6 years

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Cathodic Protection	All subsea infrastructure	Check for corrosion and renew sacrificial anodes, if required.	Varied – every 2-6 years
Wall Thickness Surveys	Production and crossover manifolds, flowlines and pipelines	Monitor the condition of subsea infrastructure. (i.e. ultrasonic testing). Typically only performed if a specific threat is identified through other means.	Typical: Once every 25 years. Worst Case: Once every 5 years
Acoustic survey including Multibeam Sonar (MBES)	Pipelines.	Identify buckling, movement, scour and seabed features. Low frequency/ intensity signals undertaken on the flowlines.	Varied – every 1-6 years
Non-Destructive Testing	Pipeline and manifolds (if required)	Evaluates the properties of material/items using electromagnetic, radio graphic, acoustic resonance technology, ultrasonic, or magnetic equipment.	Typical: Once every 25 years. Worst Case: Once every 5 years per well
Seabed sampling surveys including minor grabs/cores	NA	Identify benthic fauna, sediment characteristics, determine level of penetration / compaction, etc. Grabs/cores typically disturb 0.1 m^2 of seabed per sample.	Typical: Once every 25 years. Worst Case: Once every 5 years
Anode inspections and/or replacement	Production and crossover manifolds, trees, flowlines and pipelines	Samples taken of anode materials for testing.	Typical: Once every 25 years.
Marine growth sampling	All subsea infrastructure	Samples taken of marine growth for testing.	Typical: Once every 25 years. Worst Case: Once every 5 years
Sub bottom profiling (SBP)	Around subsea components	Low frequency echo sounder undertaken to identify returns of metals under the seabed	Varied – every 1-6 years
Laser surveys	Dimensional check on spools	Used to conduct dimensional checks on spools etc. and measure proximity.	Varied – every 1-6 years

3.7.2 Monitoring

Subsea infrastructure monitoring involves assessing the physical processes and chemical conditions to which subsea components are exposed. This monitoring is undertaken to identify if and when degradation may occur and, where relevant, to predict the rate or extent of that degradation.

Monitoring activities may include process composition testing, corrosion monitoring (e.g. probes and mitigation checks), vibration monitoring, metocean and seismic monitoring, and cathodic protection testing. Additional monitoring includes process parameters (e.g. temp, pressure), cyclone and weather monitoring, and hydraulic fluid usage.

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3.7.3 Maintenance

Maintenance activities on subsea infrastructure are undertaken at regular or planned intervals to prevent deterioration and maintain integrity. Activities may include cycling and actuating valves, flushing chemical and hydraulic fluid lines, pressure or leak testing, scour remediation, and the removal of excessive marine growth.

Table 3-7 outlines typical subsea infrastructure maintenance activities, their purpose and indicative frequencies.

Table 3-7: Typical maintenance activities, their purpose and approximate frequencies

Type of maintenance	Subsea infrastructure	Purpose	Approximate frequency
Cycling of valves via control system	Wells and manifolds	Test functionality of technical integrity valves	Well barriers are maintained as per the requirements in the current Performance Standard P10 Wells test regime.
Marine growth removal	Production and cross over manifolds and retrieval components (e.g. chokes) and jacket cleaning	Reduce weight or gain visual access	Based on outcomes from visual inspections (Table 3-6) and marine growth trends on regional infrastructure
Flushing of chemical hydraulic fluid lines	Hydraulic fluid lines	For repair scenarios	When required for repair
Leak and pressure testing	All subsea infrastructure	Test integrity of subsea infrastructure	Following installation of subsea infrastructure components after a repair or intervention, prior to return to service
Sediment relocation	All subsea infrastructure	Facilitates repair or inspection activities	When required
Scour and free span remediation	All subsea infrastructure	Integrity of subsea infrastructure	When required

3.7.4 Repair

Repair activities are undertaken when a subsea system or component is degraded, damaged or has deteriorated beyond defined acceptance limits. While such damage may not present an immediate threat to system integrity, it may represent an elevated risk to safety, environment or production reliability. Due to the design of subsea infrastructure and materials used, repairs are undertaken on an as needs basis. The requirement for, and frequency of, repairs is informed by the outcomes of the inspection and maintenance regimes described in Table 3-6 and Table 3-7, plus as the result of component operational failure. Typical subsea repair activities include:

- subsea control module (SCM) replacement
- hydraulic flying lead (HFL) replacement
- electrical flying lead (EFL) replacement
- pipeline or spool support with grout bag or mattress
- spool disconnection and/or replacement
- umbilical replacement
- riser or flowline replacement
- scour prevention installation
- corrosion protection.

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To improve the reliability of the GWF electrical system, electrical distribution units (EDUs) and EFLs are planned to be replaced in 2027 at the following drill centres; DOA, KDA, SRA, LPA, GDA and TPA.

Where equipment is replaced, redundant items may either remain in-situ or be removed from the field. The location of redundant subsea infrastructure is recorded as part of the ROV as-left survey and included in the in a database for the GWA subsea inventory.

3.7.5 Subsea chemical usage

Planned chemical discharges may occur during subsea system operation and IMMR activities. The chemicals and volumes released are activity-specific.

Operational chemicals to be used in the GWA subsea infrastructure are selected and assessed using Woodside's Environment Chemical Selection and Assessment Guideline, as detailed in Section 7.2.3.

Typical chemicals that may be released during IMMR activities include:

- control fluid – the subsea control fluid presently used in GWA subsea systems is HW443 (with the exception of the closed loop IFL SSIV system, which uses HW525). HW443 is a water-based product, with ethylene glycol as the primary component. Control fluid may be dosed with dye to support integrity monitoring.
- hydrate control – MEG
- corrosion inhibitor – used to manage and prevent corrosion within pipeline and flowlines
- biocide – used to prevent bacterial growth that may cause corrosion
- acid – typically sulphamic acid (or equivalent) used for removal of calcium deposits. Alternatives such as citric acid or calcium wash may be used
- oxygen scavenger – used to deoxygenate pipelines and reduce corrosion bacterial growth
- surfactant – used to remove water and organic deposits
- grout – typically concrete-based materials used in mattresses and rock stabilisation
- staurolite products – used for abrasive blasting. Staurolite is a naturally occurring mineral.

3.7.5.1 Discharges during IMMR activities

Discharges to the marine environment may occur during subsea IMMR activities (e.g. pressure and leak testing or flushing). Where practicable, systems are flushed prior to disconnection to minimise residual hydrocarbon or chemical releases. Flushing fluids may be supplied from the platform or via a support vessel. Where practicable, flushed fluids are returned to the platform for processing.

Table 3-8 summarises typical discharge volumes associated with IMMR activities.

Table 3-8: Typical discharge volumes during IMMR activities

Activity	Description
Pressure/leak testing	Chemical dye estimated <10 L.
Flushing	Residual hydrocarbon or chemical release (corrosion inhibitor and oxygen scavenger) volume is dependent upon injection port size, component geometry and pumping rates.
Hot stab change out	Hydrocarbons or control fluid estimated <10 L.
SCM change out	A typical release of diluted acid is estimated to be 400 L and control fluid is estimated to be 10 L.
Jumper and umbilical replacement	Typical releases of hydraulic fluid, MEG and corrosion inhibitor are estimated to be <40 L each, typical acid release of <80 L.
Choke change out	Release of hydrocarbons <10 L and a typical release of MEG is estimated to be 280 L, typical acid release of <80 L.

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Activity	Description
Tree cap change out	Release of hydrocarbons estimated <50 L and a typical release of MEG is estimated to be <50 L.
Logic plate change out	Release of hydrocarbons estimated <20 L and a typical release of MEG is estimated to be <20 L.
Flowline or spools repair, replacement and recovery	Typical release of hydrocarbon or other chemicals depends on equipment configuration and flushing ability. This will be subject to an ALARP determination for the activity, as per normal practice.
Electrical flying lead replacement	A typical release of diluted acid is estimated to be 10 L per lead.
Barrier testing	Release of hydrocarbons estimated up to 50 L condensate and 150 kg gas per test.

3.7.6 Marine growth removal

Marine growth forms on hard substrates, including subsea infrastructure, and may require removal to enable IMMR activities. Removal is typically undertaken using a ROV or, where required, a diver. Techniques are described in Table 3-9.

Table 3-9: Marine growth removal techniques

Activity / equipment	Description
Water jetting	Uses HP and UHP water to remove marine growth and to allow ultrasonic and close visual inspections.
Brush systems	Uses brushes attached to a ROV to remove marine growth.
Acid (typically sulphamic acid)	Chemically dissolves calcium deposits.
Sand/abrasive blasting. This would be done by divers only.	Additional cleaning to allow close visual inspections.

3.7.7 Pipeline pigging operations

Pipeline or flowline pigging may be undertaken for inspection, maintenance, repair or modification activities. Where required, temporary subsea or topside pig launchers and receivers may be installed. The pigging system is designed to operate within the maximum operating pressure of the production system.

The IFL can be pigged using the permanently installed GWA sphere launcher, which is a permanently installed pig trap. Pigging activities are not expected to result in routine discharges. The SSIV may be temporarily locked open for pigging activities.

3.7.8 Sediment relocation

Where sediment accumulates around subsea infrastructure, a ROV-mounted suction or dredging system may be used to relocate sediment to enable inspection and intervention activities. Such activities are limited to the immediate vicinity of the infrastructure and typically results in minor, localised seabed disturbance and temporary turbidity.

3.7.9 Suspend and preserve redundant equipment

Subsea equipment that reaches end of useful life may be suspended and preserved on the seafloor until decommissioning activities are undertaken.

3.8 Support vessel operations

Support operations include activities related to use of vessels and helicopters.

Vessels, either LNG or diesel-powered, are used in a support capacity for transferring materials, equipment, to and from the platform. Support vessels will also assist in platform emergency situations. Vessels are also used for field work such as subsea intervention (e.g. IMMR of subsea infrastructure).

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Helicopter use is the primary mode of transporting crew and/or urgent freight to and from the GWA facility and are also the preferred means of evacuating personnel in an emergency.

3.8.1 Platform support vessel

Platform support vessels (PSV) are used to support operations at the GWA platform, including the transfer of materials and equipment and provision of standby support. Vessel types and specifications may vary depending on operational requirements, availability and contract arrangements. Indicative specifications for a typical platform support vessel (e.g. *Go Aurelia*) are provided in Table 3-10.

A dedicated standby vessel is typically present at or in the vicinity of the GWA platform to provide emergency response capability. The standby vessel supports offshore operations, including personnel evacuation, monitoring of marine traffic, and assistance during offshore activities. Standby coverage is maintained on a continuous basis, with vessels operating on a rotational basis (typically in two-week periods).

In addition to the standby vessel, a PSV undertakes routine cargo operations, typically on a weekly basis. These visits involve the delivery of materials and equipment to the platform and backloading of waste and return cargo for transport to shore (e.g. King Bay Supply Facility near Dampier).

During cargo operations, the PSV operates within the 500 m Petroleum Safety Zone (PSZ), undertaking lifting and transfer activities. These activities are typically completed within a few hours, with the total duration of presence within the Operational Area generally less than 24 hours per visit.

The standby vessel and PSV may be present at the GWA platform concurrently during routine operations.

Table 3-10: Indicative platform support vessel specifications (*Go Aurelia*)

Attribute	Details
Type	Platform support vessel
Length overall	83.4 m
Breadth	18.0 m
Draft	6.7 m
Dead weight tonnage	3,964 tonnes
Accommodation	Berthing for 30 personnel
DP System	DP2
Fuel capability	1,475 m^3

3.8.2 Subsea support vessels

Subsea support vessels, including uncrewed surface vessels (USVs), are used to undertake subsea IMMR activities. Vessels supporting offshore subsea activities may vary depending on operational requirements, vessel schedules, capability and availability.

IMMR activities are undertaken as discrete campaigns, with each campaign typically of short to medium duration (approximately 2 weeks to 1 month per activity), depending on the scope and complexity of the work. These activities may occur intermittently throughout the year in accordance with operational requirements.

Subsea support vessels typically utilise DP systems to manoeuvre and avoid anchoring when undertaking works near subsea infrastructure. Anchors may be deployed in an emergency.

DP operations may require the temporary deployment of seabed transponders to support vessel positioning and subsea operations. During IMMR activities, typically a single seabed transponder is deployed in combination with other vessel positioning systems. Transponders are attached to small, recoverable moorings (e.g. clump weights or tripods) and deployed to the seabed by ROV. These have a small footprint (typically less than 0.5 m^2) and are recovered at the completion of the activity.

Indicative specifications for a typical subsea support vessel (e.g. *Fugro Etive*) are provided in Table 3-11.

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Table 3-11: Indicative subsea support vessel specifications (*Fugro Etive*)

Attribute	Details
Type	Subsea Support Vessel
Length overall (LOA)	92.95 m
Breadth	19.70 m
Depth	7.7 m
Gross tonnage	4,926 t
Accommodation	~100 POB
Dynamic Positioning System	DP2
Fuel Capacity	2,225 m^3 (241 m^3 largest diesel tank)

3.8.2.1 Uncrewed surface vessel

USVs will be remotely controlled from an onshore remote operations centre (ROC) in Australia which is staffed 24 hours a day whilst the vessel is in transit or undertaking activities. Key roles in the ROC mirror those on a usual vessel management team and include a Vessel Master, Offshore Manager and ROV Supervisor.

USVs are designed with multiple forms of high speed and reliable communication systems to allow connection to the ROC and provide redundancy in the case of disconnection during operations, including an independent emergency low-bandwidth satellite communications system for emergency use. The vessels are also fitted with 360-degree cameras monitored by the remote vessel master supporting safe navigation.

In the unlikely event of a communication failure between the ROC and USV, the USV Emergency Response Plan (ERP) is activated. The ERP includes process steps for attempting to regain control and issuing alerts or warnings to local authorities or other marine users. Depending on the type of communication loss, available controls may include, deployment of a physical anchor, mobilisation of a standby vessel or physical retrieval.

USVs are assessed by Woodside Marine (Section 7.7.2.4) to review compliance with marine laws, flag requirements, vessel class and Woodside's safety and environment requirements.

Because there are no facilities to support human occupancy on USVs, emissions and discharges are typically limited to cooling water and combustion of marine diesel. The vessel is equipped with bilge monitoring systems to monitor the bilge tanks for hydrocarbons (such as leaks from engine machinery spaces or from marine diesel tanks) and where detected the bilge pumps will auto disable and the vessel will be required to immediately return to port.

USVs have a maximum speed of 10 knots and may be equipped with a built-in work class ROV with the ability to deploy and retrieve equipment such as transponders to and from the seabed.

Indicative specifications for a typical USV are provided in Table 3-12.

USV activities are typically undertaken as part of IMMR campaigns, with durations consistent with those described in Section 3.7.

Table 3-12: Indicative USV parameters

Parameter	USV (based on *Reach Remote 2*)	USV (based on *Fugro Maali*)
Draft (max)	6 m	2.6 m
Length	23.9 m	12 m
Displacement (Gross Tonnage)	~340 t	14 t
Propulsion System	Diesel-electric hybrid	Diesel-electric hybrid
Total fuel volume	74.1 m^3	3.3 m^3

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3.8.3 Accommodation support vessel

An accommodation support vessel (ASV) may be required to support planned maintenance campaigns, shutdown activities or major projects. During the life of this EP, ASV use is expected to be infrequent, with up to one campaign within the EP period (5 years). Each campaign may be of short to medium duration (typically up to 3 months).

ASV operations may occur at any time of year, depending on operational requirements. When deployed, the ASV is typically located adjacent to the GWA platform within the 500 m PSZ for the duration of the campaign.

ASV specifications vary depending on operational requirements and vessel availability. Typical ASVs utilise dynamic positioning (DP) systems to maintain station without anchoring when operating near the platform. Anchors may be deployed in an emergency. Alternative ASVs may be semi-submersible vessels with moorings installed by support vessels prior to arrival. Vessel selection is based on factors such as seasonal conditions (e.g. cyclone vs non-cyclone season) and campaign duration.

When on location, the ASV will be surrounded by a 500 m Safety Exclusion Zone (SEZ) under the control of the vessel master. Indicative ASV specifications are provided in Table 3-13.

Table 3-13: Indicative accommodation support vessel specifications (*Floatel Triumph*)

Attribute	Details
Type	Accommodation Support Vessel
Length overall (LOA)	125 m
Breadth	80 m
Dead weight tonnage (DWT)	27,111 t
Accommodation	~500 POB
Dynamic Positioning System	DP 3
Fuel Capacity	Largest tank ~300 m^3 Total capacity ~1,800 m^3

3.8.4 Heavy lift vessel

A heavy lift vessel (HLV) may be used for the removal of redundant equipment and to support major projects. During the life of the EP, HLV use is expected to be infrequent, with up to one campaign within the EP period (5 years). Each campaign is typically of short duration (up to 1 month).

HLV operations may occur at any time of year, depending on operational requirements. When deployed, the HLV would operate in proximity to the GWA platform and subsea infrastructure.

HLVs typically utilise a DP system to maintain station and manoeuvrability without anchoring, given the proximity of subsea infrastructure. Anchors may be deployed in an emergency.

Indicative HLV specifications are provided in Table 3-14.

Table 3-14: Indicative heavy lift vessel specifications

Attribute	Details
Type	Heavy Lift Vessel
Length overall	Up to 210 m
Breadth	Up to 47 m
Draft	Approximately 11 m
Dead weight tonnage	Up to 51,000 t
Accommodation	~60 POB
DP System	Minimum DP2

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Attribute	Details
Fuel capacity	Up to 5,000 m^3 in total (individual tanks in the order of 1,000 m^3)

3.8.5 Helicopter operations

Helicopters are the primary means of transporting passengers and/or urgent freight to and from the GWA platform and support vessels. They are also the preferred means of evacuating personnel in the event of an emergency. No helicopter refuelling occurs on GWA. Helicopter support is principally supplied from Karratha Airport. There are typically 5-7 transfers per week, depending on operational requirements.

3.9 Platform well management and maintenance

Well management and well activities for platform wells are conducted from the platform. This may include routine maintenance and inspection activities through to well interventions, workovers and well kill. An outline of platform-based well management and maintenance activities are provided below.

Interventions of subsea wells would require a suitable vessel or drill rig to accommodate and support intervention activities. Interventions of the subsea wells do not form part of the scope of this EP.

3.9.1 Well intervention

Well interventions may be required for reservoir surveillance, enhancing productivity / injectivity, assessing wellbore condition, restoring well integrity, or other scenarios that develop during operate phase.

Well interventions may include the following activities:

- wellhead maintenance (including actuator, valve, choke and tree change outs)
- annulus fluid top-ups, Echo meter shots and chemical inhibition
- electric-line, slick-line and coiled tubing interventions
- logging or surveys
- fishing junk or lost-in-hole equipment
- setting and recovering plugs and wireline insert subsurface safety valves
- mitigating safety critical failures (e.g. failed safety valve)
- chemical squeeze operations
- perforating the wellbore.

In addition to above, platform well intervention activities may be performed to prepare redundant platform wells for plug and abandonment. These “pre-rig” well intervention P&A activities utilise the same type of equipment as the above well intervention activities and may include;

- wireline/slick-line operations to drift the well-bore.
- wireline/slick-line plug recovery and/or fishing operations to provide well access for deep-set pre-P&A plugs
- wireline/slick-line operations to install down-hole mechanical equipment for well-bore access (e.g. straddles)
- high-pressure pumping operations to bullhead / circulate wells (to donor well) with inhibited sea-water
- high-pressure pumping to pressure test wells and well barriers.
- wireline logging surveys (including annulus cement evaluation logs)
- wireline installation of down-hole plugs
- venting and pumping operations to “top-up” well volumes and pressure test down-hole plugs
- wireline installation (e.g. dump-bailing) of through-tubing cement plugs

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- wireline installation of alternative barrier material (e.g. Bismuth alloy) plugs
- cement batch-mixing and pumping operations to install through-tubing cement plugs (pumped from surface)
- perforating / cutting of the tubing to prepare for P&A.
- wellhead and XT maintenance, cavity testing, seal remediation etc.

3.9.2 Routine wellhead maintenance

Wellhead maintenance is conducted routinely on all surface wellheads/trees in accordance with the relevant Facility Well Integrity Management Plan.

Wellhead maintenance consists of greasing and functioning the wellhead/Xmas tree valves and replacement of any non-serviceable items. Integrity testing of the valves is also completed and recorded by the facility.

3.9.3 Well workover

Well workovers generally involve recovery and re-installation or replacement of production/injection completion strings. On the GWA facility, well workovers are undertaken using a hydraulic workover unit (HWU). Workovers may be required to replace or repair failed downhole well equipment including tubing, casing, liners or other completion components. In order to workover a well, it must be plugged.

During the workover activities, the well fluids are isolated by a deep well plug (and packer) and Blowout Preventer (BOP). In addition, the combination of the choke/kill manifold and brine is used as means of detecting and controlling the well fluids. If a kick is detected, appropriate controls are initiated to prevent further escalation, e.g. kill fluid pumped into the well (see below) or BOP shut.

3.9.4 Well kill

This is an operation to displace reservoir fluids from the wellbore by replacing them with a weighted fluid system (kill fluid) to achieve zero and stable shut-in tubing head pressure. A well kill may be required in the event that well integrity is compromised and provides a means of mitigation until such time that a more permanent fix can be implemented to re-instate full well integrity. A well kill may also be carried out to facilitate planned, routine well workover and intervention activities.

The kill fluid formula is selected according to the characteristics of the well and the reservoir fluids. Chemically treated and coarsely filtered seawater has been concluded to be an acceptable kill fluid for all GWA wells.

The following two well kill options would most likely be used on GWA:

- bull heading, where well kill fluid is pumped at a high rate and the hydrocarbon is forced back into the reservoir
- lubricate and bleed, where the reservoir is isolated/plugged and well kill fluid is introduced into the well bore and the hydrocarbon (gas) is bled off.

A mobile well kill unit may be mobilised to the GWA facility, as required, for platform well management and maintenance activities.

3.9.5 Management of activities

During intervention and workover activities, well control for the prevention of any release of reservoir fluids to the environment is achieved by various barriers such as plugs (including deep set), kill fluids and BOPs. Under normal circumstances, two or more verified barriers are maintained. Where fluid columns are used as a barrier, wells are continuously monitored for signs of a kick. If a barrier fails or a kick is detected, appropriate actions (consistent with good oil field practice and standards) are undertaken to restore barrier integrity and/or re-establish well control. However, as the work being undertaken on the GWA facility relates to production platform wells with known reservoir pressure, the likelihood of a kick is low, especially if fluid levels are maintained.

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3.9.6 Well management chemical use

Interventions, workovers and well kills may typically involve the use and discharge of chemicals which may include, but not limited to:

- glycol
- high viscous (hi-vis) polymer pills or sweeps
- surfactant and / or solvent pills or sweeps
- fluid loss control and / or lost circulation material pills
- seawater, raw or inhibited with any combinations including biocide, oxygen scavenger, caustic or soda ash
- brine, KCl / NaCl, raw or inhibited with any combinations including biocide, oxygen scavenger, caustic or soda ash.
- cement including cement additives

Any chemicals or fluids used for the above operations are selected in accordance with the Woodside Environment Chemical Selection and Assessment Guideline (Section 7).

3.9.7 Well clean-up

Following well intervention or workover activities, wells may require clean-up to remove residual fluids within the wellbore. These fluids may include reservoir hydrocarbons, workover fluids and other introduced chemicals.

Well clean-up is typically undertaken via the test separator, which allows for controlled handling and monitoring of produced fluids within the production process. Where required (e.g. where rapid unloading of well fluids is necessary), wells may be routed directly to the production process, noting that the test separator may not be suitable for handling large initial fluid volumes.

All recovered fluids, including hydrocarbons and workover fluids, enter the production process downstream of the well choke. The test separator is used where required to manage and monitor flow prior to integration with the main process streams. Gas is preferentially routed to the process system, with flaring occurring only where necessary (e.g. during upset or operational constraints).

Solids generated during well clean-up (e.g. sand or debris) are primarily removed via the sand filter located upstream of the test separator. Recovered solids are collected and managed for onshore disposal in accordance with waste management procedures. No additional filtration equipment is installed within the flowlines for well clean-up activities.

As well clean-up activities are non-routine they are managed to achieve an oil-in-water (OIW) concentration of 100 mg/L as a 24-hour rolling average (for up to 4 days), where fluids are routed to the produced water system. The 30 mg/L monthly rolling average OIW threshold must be achieved at all times.

3.9.8 Production from high water cut wells

Water production from GWA platform wells has increased over time, resulting in a number of high water cut wells (e.g. GWA03, GWA05, GWA08, GWA18 and GWA19). Under routine operations, these wells are managed using operational controls (e.g. choke management and well shut-in) to optimise production while maintaining PW quality within operational limits. Routine GWA operations are managed to achieve a PW OIW concentration limit of 30 mg/L as a 24-hour rolling average.

Well unloading of long-term shut-in high water cut wells requires a faster than usual bean-up rate to ensure a successful kick-off of these wells and unload the formation water in the wellbore. This ensures the gas velocity is sufficient to lift the accumulated column of liquid in the wellbore initially and subsequently sustain production of reservoir fluids without loading the wellbore with water. This rapid bean-up does not allow sufficient water residence time in the separation process units, potentially resulting in higher-than-normal instantaneous OIW values. Historically, these higher-than-normal OIW values caused the well to be shut-in again, before the kick-off activity could be completed.

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Trials undertaken between 2019-2021 demonstrated that elevated OIW concentrations associated with short-term high or unstable water production during well unloading were temporary and did not represent long-term PW performance. OIW concentrations reduced once steady production was established, and subsequent restart events from the same wells generally exhibited progressively lower OIW peaks depending on the duration of the preceding shut-in period.

Accordingly, GWA distinguishes between three operating states for high water cut wells: well unloading, well cycling and normal production (Table 3-15). Well unloading and well cycling are planned, non-routine operational activities undertaken under defined operational controls. Because these activities involve transient operating conditions rather than steady-state production, a temporary operating threshold of 100 mg/L OIW as a 24-hour rolling average applies during the activity. A monthly rolling average OIW concentration of 30 mg/L is maintained at all times.

Table 3-15: High water cut well start up activities based on duration since last production

Activity	Description	Production history
Non-routine: Well Unloading	• Offline for a substantial period and can behave differently when returned to production • Requires faster than usual bean-up rate to ensure a successful kick-off to unload formation water in the wellbore • Rapid bean-up does not allow sufficient water residence time in the separation process units potentially resulting in higher-than-normal instantaneous OIW values	>12 months since last production
Non-routine: Well Cycling	• Well has previously been unloaded following an extended shut-in period. • A receding aquifer with reservoir properties such as high permeability sands to facilitate aquifer movement into the reservoir. Sufficient reservoir pressure to support well kick off • Shut-in when gas can no longer be lifted to topsides due to water-gas ratio (WGR), cycled on and off approximately three monthly	>3 and <12 months since last production
Routine: Normal production	• Wells that are part of normal, recent production (including high water cut)	<3 months since last production

3.10 GWF4 and future tie-in production well commissioning

The commissioning activities of GWF4 infrastructure are planned to occur over multiple campaigns in 2027 and 2028. Two additional future tie-in production wells that form part of the scope of this EP, if progressed, would be commissioned after GWF4. All activities may be rescheduled based on operational requirements of the GWA facility or for other production scheduling reasons.

The scope of this EP commences once hydrocarbons are introduced into the system (i.e. during hot commissioning). Following introduction of hydrocarbons, preservation fluids are displaced to the GWA platform, where they are processed through the production system, and wells are subsequently cleaned-up to achieve stable production. If unloading to MODU, preservation fluids are processed through a rig for well unload, and the wells are then routed to the facility for introduction of hydrocarbon to the platform and complete clean-up.

Gas produced during commissioning is generally treated as production gas and routed through separation systems to export. However, during specific commissioning activities (nitrogen displacement from flowlines), additional flaring may be required to safely manage non-hydrocarbon gases and off-specification gas streams.

Commissioning and performance testing activities include (amongst other):

- subsea valve leak-off testing and function testing
- flowline preservation fluid and nitrogen displacement from flowlines and subsea infrastructure
- final well clean-up
- simulated emergency shutdown (ESD) test

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- flowmeter calibration
- control valve functionality
- system performance testing
- fluid sampling.

During commissioning, the facility may experience short periods (up to 4 days) of elevated OIW levels (up to 100 mg/L 24 hour rolling average). This is primarily due to the introduction of preservation fluids (MEG, water and biocide mixtures) during well start-up. To manage this, a temporary OIW polishing skid will be deployed to support treatment and maintain OIW within acceptable limits.

The Wilcox wells are planned to be unloaded to MODU prior to being routed to the facility to complete well clean-up. Installation of the 25 km Wilcox flowline will result in the flowline being filled with nitrogen, which will require controlled displacement during commissioning. Nitrogen is managed through the facility and must be flared, in accordance with operational constraints, to maintain safe operation of topsides systems and prevent impacts to export gas specifications and equipment performance.

Flaring associated with commissioning activities will be planned, controlled and minimised, with commissioning sequences optimised to reduce hydrocarbon flaring while maintaining safe and stable operations.

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4. DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with Regulations 21(2) and 21(3) of the Environment Regulations, this section describes the existing EMBA by the Petroleum Activity (planned and unplanned, as described in Section 3), including details of the particular relevant values and sensitivities of the environment, which were considered for the impact and risk assessments.

The EMBA is the largest spatial extent where unplanned events could have an environmental and/or socio-cultural consequence on the surrounding environment. For this EP, the EMBA is the combined potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the event of the following credible worst-case scenarios (Section 6.8.2):

- scenario 1 - well blowout – seabed release from highest flow rate subsea well (YOD05, part of the GWF4 development)
- scenario 2 - well blowout – surface release from platform wellhead (GWA08)
- scenario 4 - subsea release from IFL (including 2TL inventory) downstream of SSIV but within 500 m of GWA facility
- scenario 5 - surface release from IFL (including 2TL inventory) from rupture of riser at GWA facility.

The ecological impact thresholds used to delineate the EMBA are defined in Section 6.8.2.3. The EMBA also includes areas that are predicted to experience shoreline contact with hydrocarbons above threshold concentrations

Woodside recognises that hydrocarbons may be visible at lower concentrations than the ecological impact thresholds defined in Table 4-1. These visible hydrocarbons have the potential to cause socio-cultural impacts. In respect of this, the EMBA also includes hydrocarbon thresholds where socio-cultural impact could occur. Receptors relevant to the socio-cultural hydrocarbon thresholds include cultural values and heritage, Commonwealth and State marine protected areas (MPAs), National and Commonwealth Heritage Listed places, areas of tourism and recreation, and commercial and traditional fisheries. For this EP, the socio-cultural hydrocarbon thresholds for surface hydrocarbons encompasses a wider area than the EMBA for ecological impacts. The EMBA and socio-cultural hydrocarbon thresholds are shown in Figure 4-1 and described in Table 4-1.

The EMBA does not represent the predicted coverage of any one hydrocarbon spill nor depict a slick or plume at any particular point in time. Rather, the EMBA represents a composite of a large number of theoretical paths, integrated over the full duration of the simulations under various metocean conditions.

Table 4-1: Hydrocarbon spill thresholds used to define the EMBA for surface and in-water hydrocarbons

Hydrocarbon type	Ecological hydrocarbon thresholds[1]	Socio-cultural hydrocarbon thresholds[1]	Planning area for operational and scientific monitoring
Surface (floating)	10 g/m^2 This represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.	1 g/m^2 This represents a wider area where a visible sheen may be present on the surface and, therefore, the concentration at which socio-cultural impacts to the visual amenity of the marine environment may occur. However, it is below concentrations at which ecological impacts are expected to occur. This low exposure value also establishes the planning area for operational and scientific monitoring.	
Dissolved	10 ppb The biological effects of hydrocarbons are driven by the fraction of hydrocarbons that are dissolved and therefore bioavailable to aquatic organisms. Toxicity studies show 10 ppb is protective of more than 95% of species for acute exposures, while still capturing		10 ppb This low concentration value establishes the planning area for operational and scientific monitoring within which further analysis can be

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Hydrocarbon type	Ecological hydrocarbon thresholds[1]	Socio-cultural hydrocarbon thresholds[1]	Planning area for operational and scientific monitoring
	the onset of effects in the most sensitive species and life stages (French-McCay 2026; Negri et al. 2021; Bejarano et al. 2017). As dissolved hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are associated with ecological impacts. Therefore, dissolved hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		undertaken to inform monitoring priorities. In the event of a spill, DNP will be notified of AMPs which may be contacted by hydrocarbons at this threshold (Table 7-13).
Entrained	1,000 ppb Entrained hydrocarbons have limited bioavailability as toxic effects are driven by the small soluble fraction (typically less than 1% of the oil mass) that dissolves into the water column (French-McCay 2026). As entrained hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are associated with ecological impacts. Therefore, entrained hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		
Shoreline	100 g/m^2 This represents the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat.	10 g/m^2 This represents the volume where hydrocarbons may be visible on the shoreline but is below concentrations at which ecological impacts are expected to occur.	

[1] Further details including the source of the thresholds used to define the EMBA in this table are provided in Section 6.8.2.3.

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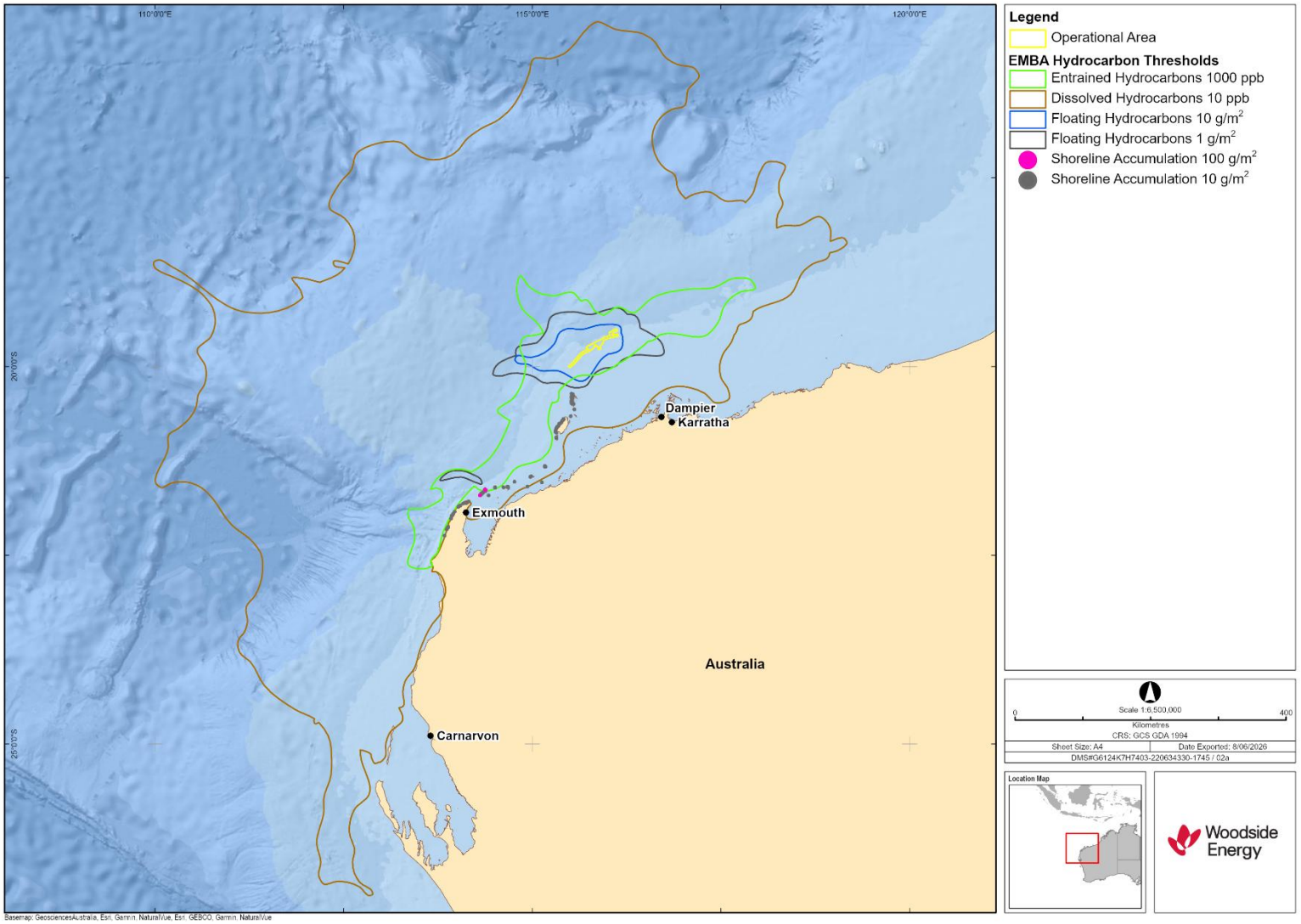


Figure 4-1: The environment that may be affected by the Petroleum Activity

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4.2 Regional context

The Operational Area is located in Commonwealth waters within the North-west marine region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMC

RA v4.0) (DSEWPC 2012), in water depths of approximately 74 to 200 m. Within the NWMR, the Operational Area lies within the NWS Province (Figure 4-2). The EMBA also overlaps the Northwest Province, the Northwest Transition and the South-west Marine Region. The Master Existing Environment document (Appendix C) summarises the characteristics for the relevant marine bioregions.

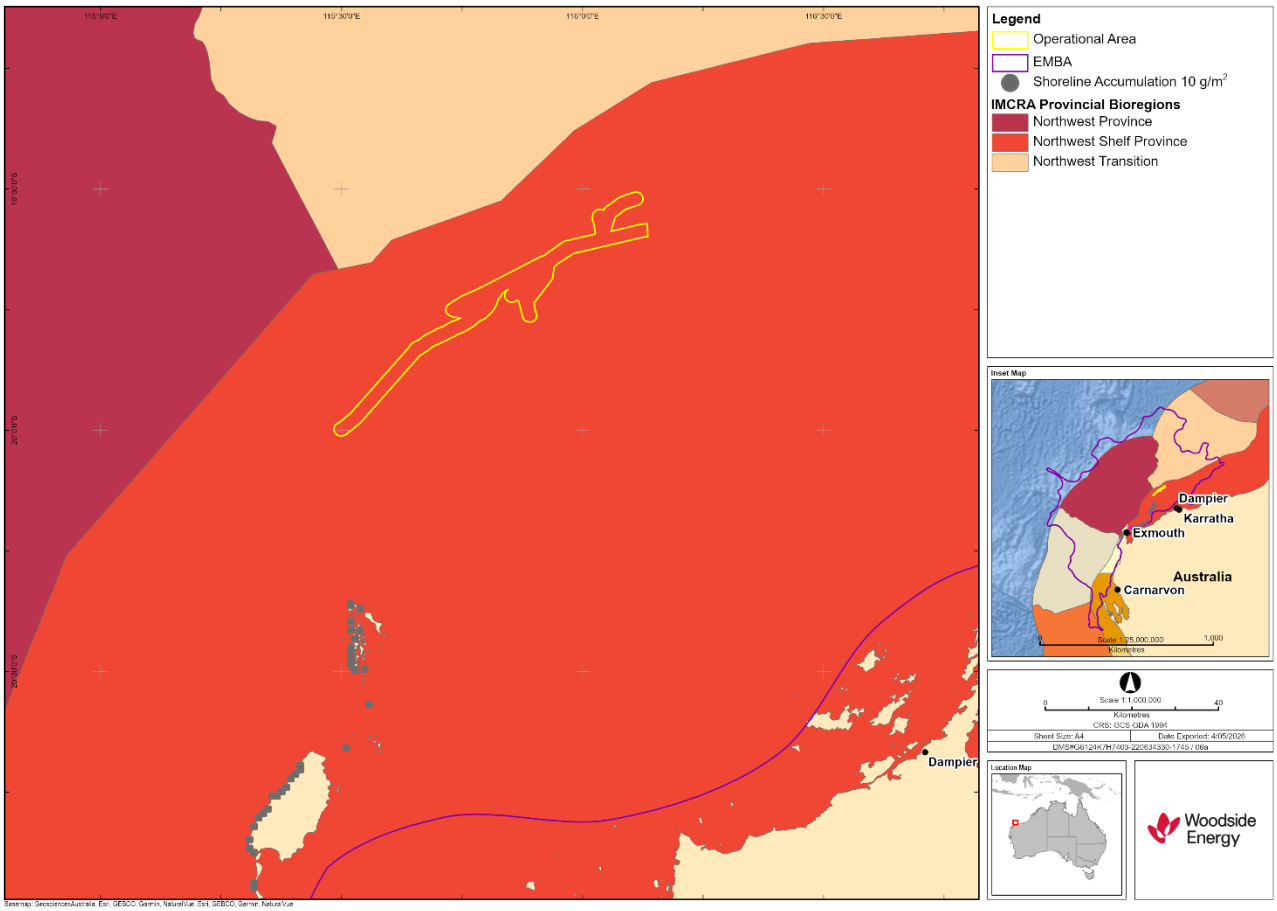


Figure 4-2: Location of the Operational Area and relevant marine bio-regions

4.3 Matters of national environmental significance (EPBC Act)

Table 4-2 summarises the matters of national environmental significance (MNES) that overlap the Operational Area and EMBA, based on results from the Protected Matters Search Tool (PMST) (Appendix D).

The EPBC Act PMST is a screening tool that identifies MNES with the potential to occur within a search area using a conservative, grid-based approach. In offshore marine environments (>30 km from the coast), the PMST applies grid cells of 32 km × 32 km. Accordingly, the PMST report may indicate the presence of MNES that do not directly intersect with the Operational Area or EMBA (Appendix D).

To ensure accurate consideration of potential impacts to MNES, spatial datasets (shapefiles) provided by DCCEEW were analysed using Geographic Information System (GIS) software to determine the actual spatial overlap with, and proximity to relevant MNES. Table 4-2 provides a summary of relevant MNES identified by the PMST as potentially occurring within the Operational Area and EMBA and reflects the outcomes of the refined spatial assessment.

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Further information on MNES relevant to the Petroleum Activity is provided in the following sections and detailed in Appendix D.

Table 4-2: Summary of relevant MNES identified by the EPBC Act PMST as potentially occurring within the Operational Area and EMBA

MNES	Number of MNES in Operational Area	Number of MNES in EMBA
WHPs	0	3
National Heritage Places (NHPs)	0	3
Wetlands of International Importance (Ramsar)	0	0
Commonwealth Marine Area	2	3
Listed Threatened Ecological Communities	0	0
Listed Threatened Species[1]	27	46
Listed Migratory Species[1]	43	68
Listed Migratory and Threatened Species[1]	50	81

[1] MNES which are not known to inhabit shorelines, nor rely on the marine environment for their diet, have been discounted from these totals and have not been assessed.

4.4 Physical environment

Water depth along the IFL is between 78 and 130 m. The GWA platform stands in approximately 131 m of water and is situated approximately 138 km north-west of Dampier and 23 km south-west of NRC. The subsea gathering system extends to depths of 200 m.

The Operational Area lies on the outer continental shelf in waters approximately 74 to 200 m deep (Figure 4-3). The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province shelf region (Baker et al. 2008). The seabed has a gentle (0.05°) seaward gradient extending to a steep distal slope occurring between 200 to 300 km offshore in water depths of around 200 m (Dix et al. 2005). The continental slope then descends more rapidly from the shelf edge to depths greater than 1,000 m to the north-west (James et al. 2004).

Appendix C provides a summary of the physical characteristics of the environment within the EMBA.

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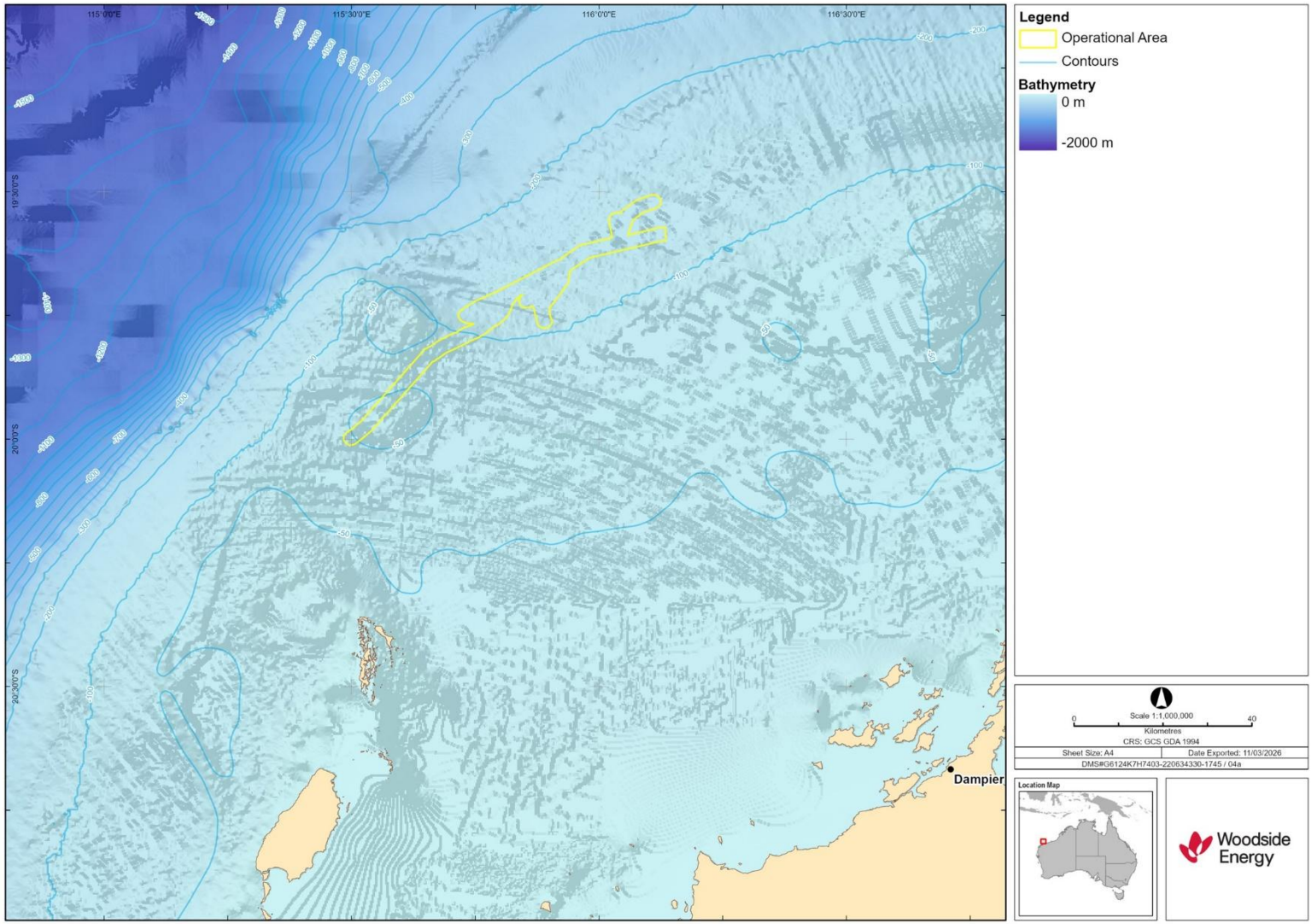


Figure 4-3: Bathymetry of the Operational Area and broader region

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4.5 Habitats and biological communities

Sediments in the Operational Area are broadly consistent with those in the NWS Province, with typically low levels of potential contaminants of geogenic origin (often below laboratory limits of detection). Sediments in the outer NWS Province are relatively homogenous and are typically dominated by sands and a small portion of gravel (Baker et al. 2008). Fine sediment size classes (e.g. muds) increase with proximity to the shoreline and the shelf break but are less prominent in the intervening continental shelf (Baker et al. 2008). Carbonate sediments typically account for the bulk of sediment composition, with both biogenic and precipitated sediments present on the outer shelf (Dix et al. 2005). Beyond the shelf break, the proportion of fine sediments increases along the continental slope towards the Exmouth Plateau and the abyssal plain (Baker et al. 2008).

Across the NWS Province, localised areas of elevated barium (AIMS 2014b, RPS 2012) have been identified, which have been attributed to contamination from historical drilling activities (AIMS 2014b). Around the GWA platform, the contamination of sediments with barite (barium sulphide), is considered to be localised within 200-400 m, with other potential contaminants such as heavy metals present in low concentrations (BMT Oceanica 2015). Sediments in the Operational Area are expected to be comprised primarily of fine sands, very fine sands and silt, with monitoring near the GWA platform indicating these size fractions constitute the majority of sediments (BMT Oceanica 2015).

While hard substrates are not known to occur within the Operational Area, they occur in the region more broadly and can host more diverse benthic communities. Hard substrate may be associated with the Ancient Coastline at 125 m Depth Contour Key Ecological Feature (KEF) (Section 4.7), which overlaps the Operational Area.

The southern extent of the Operational Area partially overlaps the Montebello Marine Park (Figure 4-14). An ROV survey within the northern extent of the Montebello Marine Park was undertaken in 2019 to characterise the benthic habitats and communities within the area (Advisian 2019). Video imagery was collected from transects, and the habitat was classified in accordance with the Collaborative and Automated Tools for the Analysis of Marine Imagery (CATAMI) classification system. Five areas within the Montebello Marine Park were surveyed, of which three (Area 2, Area 3, Area 4) are in the vicinity of the Operational Area (Figure 4-4). Water depths in the three areas were very similar, with the midpoints depth of transects ranging from ~70–78 m. The Advisian (2019) survey findings are summarised in Table 4-3.

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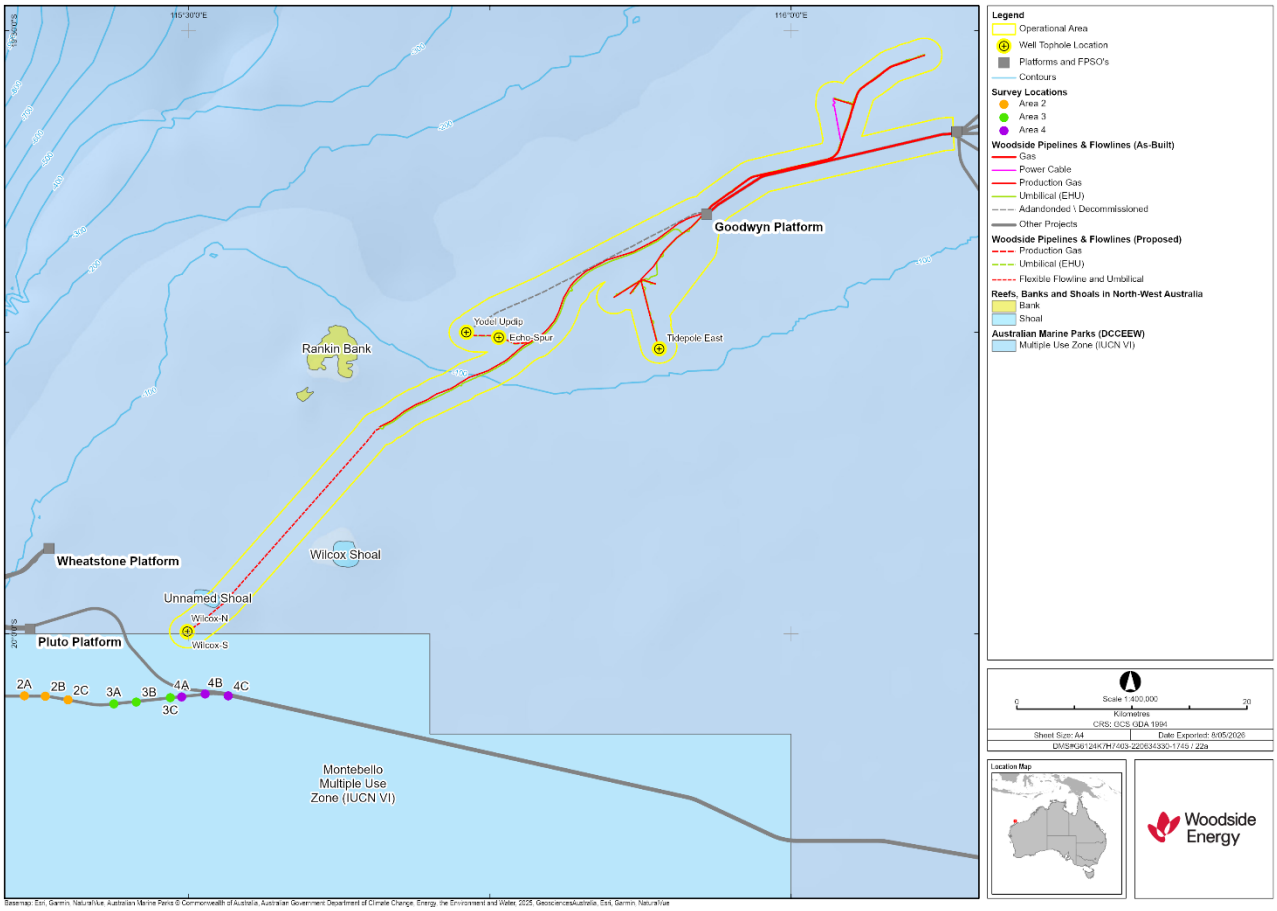


Figure 4-4: Montebello Marine Park benthic transect locations (Advisian 2019)

Table 4-3: Summary of benthic habitat and communities in the northern Montebello Marine Park (Advisian 2019)

Area	Summary description	Example ROV footage
2	• the seafloor was relatively flat and sandy with a light to high cover of unconsolidated biologenic gravel and/or organic material. Small undulations of the seabed were seen but no other regular bedforms such as sand ripples or sand waves were apparent. • no significant high relief habitat features, or areas of consolidated hard substrate, were observed in any transect. • some areas of seafloor were relatively bare while others included a low (~5%) to high (~80%) density cover of benthic organisms. This benthic cover changed continually and often (within metres) over each transect. Benthic fauna comprised a diverse array of sponges and corals with varying forms, sizes and colours. Hydroids and cnidarians were also apparent on occasion. • bioturbation of the seafloor in the form of small cones, craters, burrows, small and large trails was also apparent. Mobile organisms including	

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Area	Summary description	Example ROV footage
	fish, echinoderms and jellyfish, were also noted on the videos.	
3	• the seafloor in Area 3 was relatively flat and sandy with a light to high cover of biologenic gravel and/or organic material over its entire length (continually changing). Small undulations of the seabed and some small sand waves were present on occasion, but no other regular bedforms such as sand ripples or sand waves were apparent. • no significant moderate or high relief habitat features were observed on the video or can be seen on the transect maps with detailed bathymetry. Any features seen are ~1 m high and occur over relatively large scales. • the seabed was a mosaic of bare substrate and low (~5%) to high (~75%) density cover of benthic organisms (e.g. sponges, corals). Benthic fauna comprised a diverse array of sponges and corals with varying forms, sizes and colours. Hydroids and cnidarians were also apparent on occasion along the transect length. • bioturbation of the seafloor in the form of small cones, craters, burrows and small and large trails was apparent. Mobile organisms including fish, echinoderms and jellyfish were also noted on the videos. Fish fauna diversity was quite high, and varying sizes of fish were seen amongst the aggregations of corals and sponges and also over bare sandy seafloor.	 
4	• the seafloor within Area 4 was typically flat sand with a high level of biogenic gravel of unknown origin. Small mounds, waves and undulations all <50 cm high were seen on occasion, mainly around aggregations of benthic epifauna (i.e. sponges and corals). • no significant moderate or high relief features or significant areas of consolidated hard substrate were present in Area 4 that could be seen on the video or transect maps. • the seafloor was scattered with sponges and corals of varying forms and sizes; these occurred as individuals with a low-density cover (~5%) up to more dense clusters (~50%). Other benthic epifauna included echinoderms and cnidaria. Mobile fauna (mainly small bony fishes) were most common around the larger clusters of sponges and corals. • areas of bare sand occurred amongst the patches of epifauna. The switch between bare	

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Area	Summary description	Example ROV footage
	sand and benthic cover changed constantly and over short distances. • bioturbation of the seafloor in the form of small mounds and craters was evident along the entire transect length.	

There are three shoals within or close to the Operational Area that are relatively shallow and described further in Table 4-4:

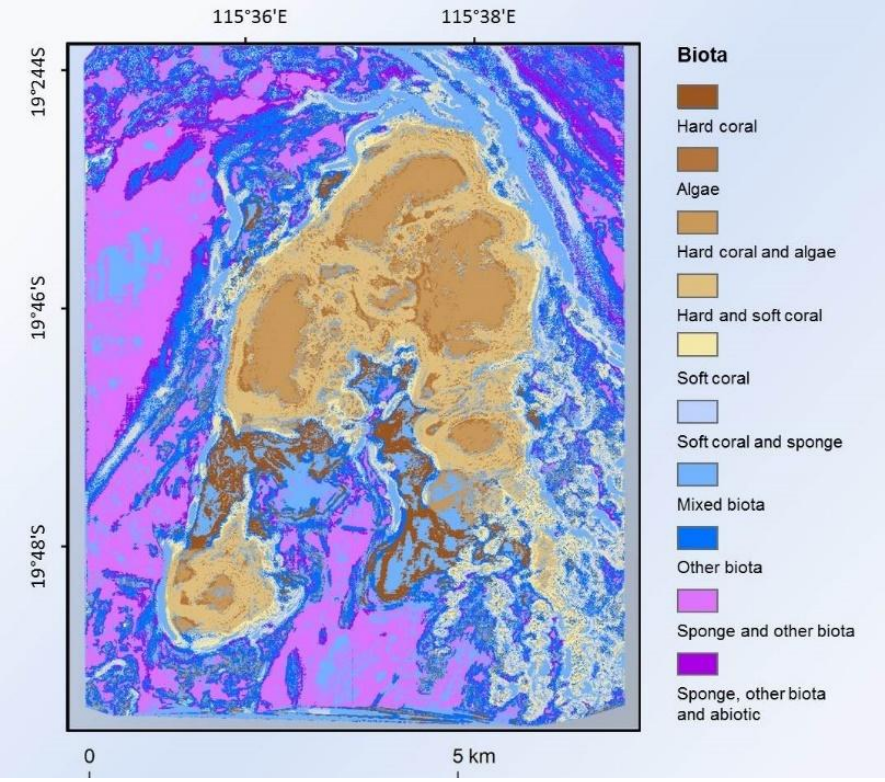
- Rankin Bank – water depths of ~18-30.5 m, located 3.7 km north-west from the Operational Area
- Unnamed Shoal – water depths of ~40-50 m, located within the Operational Area
- Wilcox Shoal – water depths of ~25-80 m, located 2.4 km south-east from the Operational Area.

Key habitats and ecological communities, including shallow water shoals within the EMBA, are briefly described and identified in Table 4-4, and displayed in Figure 4-6. A full description of the habitats and ecological communities is contained within the Master Existing Environment (Appendix C).

Table 4-4: Habitats and communities within the environment that may be affected (distance calculated from Operational Area)

Habitat/ community	Key locations within the EMBA
Seabed characteristics	
Ancient Coastline at 125 m Depth Contour	The Ancient Coastline at 125 m Depth Contour KEF (Ancient Coastline KEF), overlaps part of the Operational Area (DAWE 2019a; Section 4.7). Areas of this KEF comprise hard substrate and may occur within the Operational Area. Hard substrate seabed habitats present within the Operational Area are likely to support filter feeding biota such as sponges and gorgonians (sea whip and fans), as reported for hard substrate seabed habitat in similar water depths along this outer shelf area of the NWS.
Glomar Shoal	Glomar Shoal is a large (~215 km^2) and complex bathymetric feature situated on the outer continental shelf off the Pilbara coast. Glomar Shoal is ~8.5 times wider than Rankin Bank at the 60 m contour. Glomar Shoal is a shallow sedimentary bank comprising coarser biogenic material than the surrounding seabed. The shoal is ~26–70 m below the sea surface (Falkner et al. 2009) and is 51.5 km east of the Operational Area. Glomar Shoal has been identified as a KEF for its high productivity and aggregations of marine life (Falkner et al. 2009). This KEF encompasses a wider area than the shoal feature itself. Together with Rankin Bank, these remote shallow-water shoals represent regionally significant habitats and are considered likely to play an important role in the productivity of the Pilbara region (AIMS, 2014a; Abdul Wahab et al. 2018). Glomar Shoal has a high percentage of marine-derived sediments with high carbonate content and gravels of weathered coralline algae and shells (McLoughlin and Young 1985) The area's higher concentrations of coarse material compared to surrounding areas are indicative of a high-energy environment subject to strong seafloor currents (Falkner et al. 2009). Cyclones are also frequent in this area and stimulate periodic bursts of productivity because of increased vertical mixing (Abdul Wahab et al. 2018). Studies by Abdul Wahab et al. (2018) found several hard coral and sponge species in water depths <40 m.
Rankin Bank	Rankin Bank is located 3.7 km north of the Operational Area. Although it is not a KEF, Rankin Bank, along with Glomar Shoal, are large and complex bathymetric features on the outer western shelf of the Pilbara and represents habitats that are likely to play an important role in the productivity of the Pilbara region (AIMS 2014b). Rankin Bank comprises three submerged shoals delineated by the 50 m depth contour, with water depths of ~18–30.5 m (AIMS 2014b). Rankin Bank has a diverse marine environment, predominantly comprising consolidated reef and algae habitat (~55% cover at depths of <40 m), followed by hard corals (~25% cover at depths of

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Habitat/ community	Key locations within the EMBA
	<40 m), unconsolidated sand/silt habitat (~16% cover with increasing prevalence at depth), and benthic communities comprising macroalgae, soft corals, sponges and other invertebrates (~3% cover) (AIMS 2014b; Figure 4-5). Hydrocarbon and trace metal concentrations in sediments indicate the bank has not been affected by anthropogenic pollution (AIMS 2014b). Hard corals are a significant component of the benthic community of some parts of the bank, with abundance in the upper end of the range observed elsewhere on the submerged shoals and banks of north-west Australia (Heyward et al. 2012).  *Source: North West Atlas; https://maps.northwestatlas.org* **Figure 4-5**: **Rankin bank benthic habitats** The habitat surrounding Rankin Bank (<50 m) was mapped by AIMS on behalf of Woodside (AIMS, 2014b) and hosts filter-feeding communities in areas of consolidated substrate interspersed by sand. Further surveys in 2017, in water depths greater than 70 m at the, at the GWF4 LPA manifold location, found that epibenthic taxa were very sparse but typically clumped and comprised of mixed filter feeders such as sea whips, sea fans (gorgonians) other soft corals, sponges and hydroids (Jones et al. 2021). It is expected that these filter feeder communities may be sparsely distributed in the south-west section of the Operational Area. Rankin Bank has been shown to support a diverse fish assemblage (AIMS 2014b). This is consistent with studies showing a strong correlation between habitat diversity and fish assemblage species richness (Gratwicke and Speight 2005, Last et al. 2005).
Unnamed Shoal	Unnamed Shoal is located within the Operational Area and approximately 1.9 km north of the nearest flowline. It is a small shoal around ~1 km^2 in water depths between 40 and 50 m. The reef top has moderate to high relief rock with stony corals (~40 m water depth) with ~30% cover and then transitioning to mixed biota on the reef slopes in depths 50 to 60 m. Unnamed Shoal supports some high relief coral reef but lacks the extent and structural complexity of the coral habitat on Wilcox Shoal (Worley 2025). Deeper water habitats surrounding Unnamed Shoal are very similar to Wilcox Shoal consisting of sparsely distributed gorgonians, sea whips, soft corals, sponges, and sea fans (Worley 2025). To the southwest there are areas of rock veneer that were mostly bare, and to the north there are areas of sand veneer, unconsolidated gravel, and unconsolidated sand, similar to Wilcox Shoal (Worley 2025).
Wilcox Shoal	The Wilcox Shoal is located 2.4 km south-east of the Operational Area. Wilcox Shoal is an isolated submerged oceanic shoal, rising from 80 m depth and reaching 26 m depth at its shallowest point

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Habitat/ community	Key locations within the EMBA
	(Worley 2025). The top of the shoal has high structural complexity owing to the presence of shallow (<30 m) surface reef communities dominated by hard corals. The north and north-eastern sides of the shoal have steep slopes that drop from 40 m to 75 m, whereas the southern side has a gentle depth gradient and a long plateau out to the 70 m contour (Worley 2025). In general, the habitat transitions from coral-dominated within the reef top into consolidated cobbles (coral rubble) and unconsolidated (soft) sand with sparsely distributed hard corals and other invertebrates including octocorals and porifera (e.g. gorgonians, sea whips, soft corals, sponges, and sea fans) along the shoal slope at ~30 m to 60 m depth (Worley 2025). The seabed surrounding the base of the shoal was characterised as unconsolidated sand with intermittent octocorals and porifera in deep (70–80 m) waters (Worley 2025). The range of habitat types recorded at Wilcox Shoal were similar to those recorded at other shoals along the Western Australian coastline, including Rankin Bank (Worley 2025).
Tryal Rocks	Tryal Rocks is located 29.7 km southwest of the Operational Area, and within the Montebello Marine Park Tryal Rocks are a small group of low-lying coral reef structures, comprising two closely spaced reef systems aligned northeast–southwest, with shallow depths (locally less than 20 m) and sections that dry at low tide.
Marine primary producers	
Coral	• Rankin Bank (3.7 km north-west from the Operational Area) • Glomar Shoal (51.5 km east from the Operational Area) • Montebello Islands (38 km south from the Operational Area) • Barrow Island (72 km south from the Operational Area) • Ningaloo Coast (240 km south-south-west from the Operational Area) • Muiron Islands (212 km south-south-west from the Operational Area)
Seagrass beds and macroalgae	• Montebello Islands (38 km south from the Operational Area) • Barrow Island (72 km south from the Operational Area) • Ningaloo Coast (240 km south-south-west from the Operational Area) • Muiron Islands (212 km south-south-west from the Operational Area) • Exmouth Gulf (222 km south-west from the Operational Area)
Mangroves	• Ningaloo Coast (240 km south-south-west from the Operational Area) • Montebello Islands (38 km south from the Operational Area) • Exmouth Gulf (222 km south-west from the Operational Area)
Other communities and habitats	
Plankton	Plankton within the Operational Area and EMBA are expected to be representative of the wider NWMR, as detailed in Appendix C, Section 4.3. Peak primary productivity within the EMBA occurs in late summer/early autumn, along the shelf edge of the Ningaloo Reef. It also links to a larger biologically productive period in the area that includes mass coral spawning events, peaks in zooplankton and fish larvae abundance (CALM 2005a), with periodic upwelling throughout the year. Further detail regarding productivity at other notable locations within the EMBA (e.g. North-west Cape) is provided in Appendix C, Section 4.3.3.
Pelagic and demersal fish populations	Pelagic and demersal fish populations within the Operational Area and EMBA are expected to be representative of the NWMR (described in Appendix C, Section 6.2). Particular features within the EMBA that are known to support pelagic and demersal fish populations include the Ancient Coastline at 125 m Depth Contour KEF (which also overlaps the Operational Area), the Continental Slope Demersal Fish Communities KEF, the Western demersal slope and associated fish communities of the Central Western Province KEF, Rankin Bank and Glomar Shoal (including the Glomar Shoal KEF). Detail regarding these features is provided in Appendix C, Section 11.
Epifauna and infauna	Filter feeders such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA 2008). Filter feeders within the EMBA are expected to be representative of the NWMR, with notable areas of high sponge diversity occurring in the

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Habitat/ community	Key locations within the EMBA
	Commonwealth waters of Ningaloo Marine Park and at shoals (such as Glomar Shoal) within the EMBA (see Appendix C, Section 5.2). Discrete areas of hard substrate hosting sessile filter feeding communities may also be associated within the Ancient Coastline at 125 m Depth Contour KEF, which overlaps the Operational Area. Filter feeder communities within the Operational Area are present on the subsea infrastructure and GWA platform, which provides hard substrate for attachment in an otherwise generally featureless, soft and sandy substrate.

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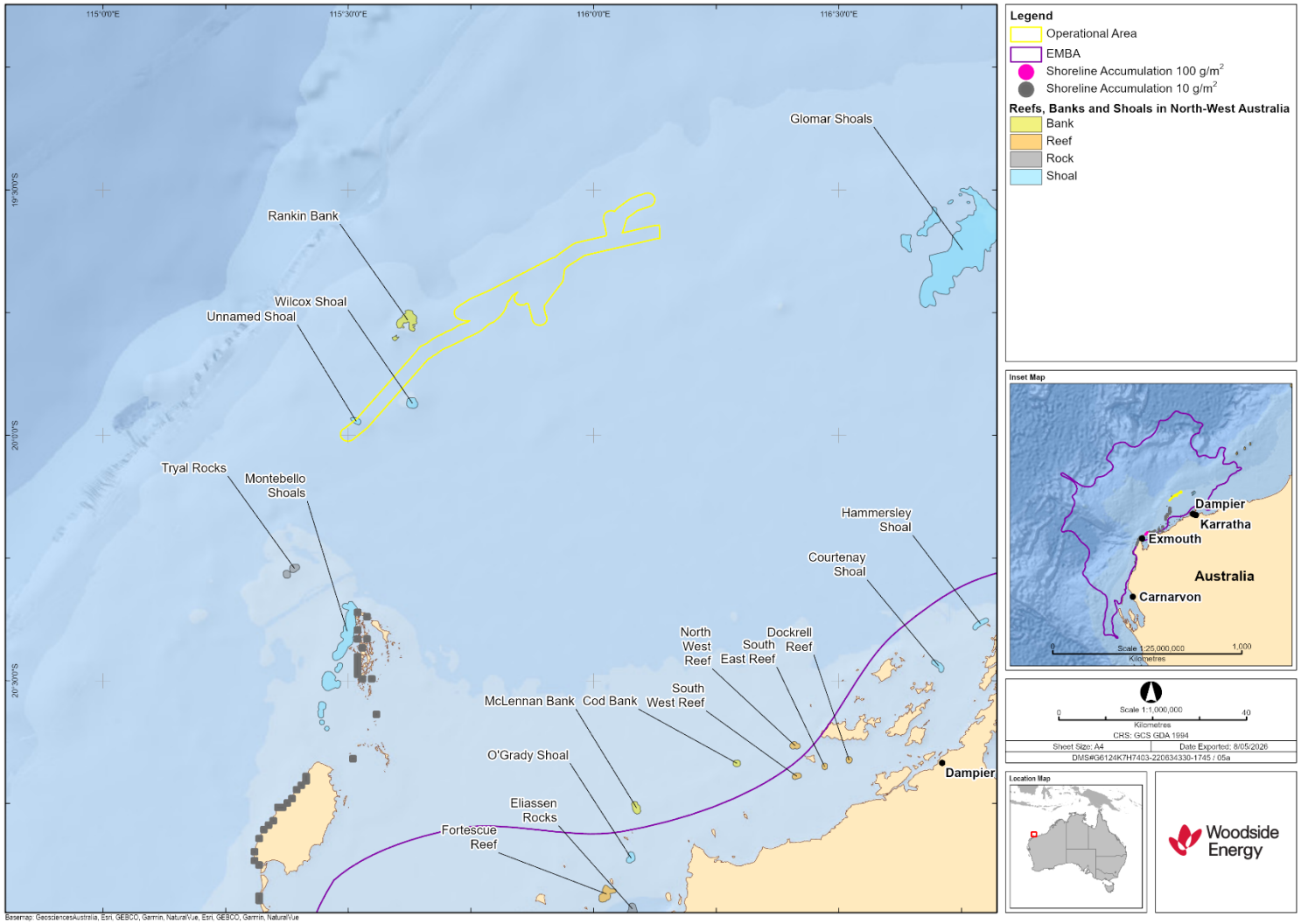


Figure 4-6: Reef, shoals and banks within the EMBA.

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4.6 Protected species

A total of 81 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 50 species were identified as potentially occurring within the Operational Area. The full list of marine species identified by the PMST is provided in Appendix D. As outlined in Section 4.3, the PMST report is produced from a grid-based search, which can cause species outside of the search area to be detected, such as terrestrial. Species identified in the PMST that are not known to inhabit shorelines, nor rely on the marine environment for their diet, are not assessed. Two conservation dependent species have also been identified with a potential to occur within the Operational Area and EMBA.

Species identified as potentially occurring within the Operational Area and EMBA as well as biologically important areas (BIAs) or habitat critical to their survival (habitat critical) that overlap the Operational Area and EMBA are listed in Table 4-5 to Table 4-13. Figure 4-7 to Figure 4-11 show the spatial overlap between relevant BIAs and habitat critical areas and the Operational Area and EMBA. Species that are predicted to have ecologically significant interactions in the Operational Area are described in further detail in this section. Key threatened and migratory species and associated biologically important behaviours in the EMBA are further described in Appendix C.

4.6.1 Fish, sharks and rays

A total of 16 EPBC Act listed threatened and migratory fish species have been identified to potentially occur within the EMBA, of which 14 occur in the Operational Area (Table 4-5).

An additional 44 EPBC Act listed fish, shark and ray species, including a variety of pipefish and sea dragons, which do not have a threatened or migratory status are recorded to occur within the EMBA. A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

Fish, shark and ray BIAs that overlap the EMBA are presented in Figure 4-7 and in Table 4-5. Further description of BIAs is provided in Appendix C.

4.6.1.1 Whale shark

The Operational Area overlaps a foraging BIA for the whale shark (Figure 4-7, Table 4-5). The whale shark, *Rhincodon typus*, is a planktivorous shark and feeds on a variety of planktonic organisms including krill, jellyfish, and crab larvae (Last and Stevens 2009). Whale sharks form seasonal aggregations at Ningaloo Reef between March and July (TSSC 2015c). However, seasonal aggregation can be variable, with individual whale sharks recorded at other times of the year.

This species migrate annually along the 200 m isobath of the WA coast between July and November (TSSC 2015c). Timing of the whale shark migration to and from Ningaloo coincides with the coral mass spawning period when there is an abundance of food (krill, planktonic larvae and schools of small fish) in the waters adjacent to Ningaloo Reef (DCCEEW 2024a). At Ningaloo Reef, whale sharks stay within a few kilometres of the shore and in waters about 30–50 m deep (Wilson et al. 2005). After the aggregation period, the distribution of whale sharks is largely unknown. Satellite tracking has shown that the sharks may follow three migration routes from Ningaloo (Meekan and Radford 2010):

- north-west, into the Indian Ocean
- directly north, towards Sumatra and Java
- north-east, passing through the NWS and travelling along the shelf break and continental slope.

Anecdotal evidence from sightings data collected from the Woodside offshore facilities on the NWS indicate that whale sharks are present on the NWS in April, and between July and October. Sightings between July and October correspond with the whale shark's seasonal northward migration from Ningaloo Reef (July to November). However, the numbers of individual whale sharks that transit through the Operational Area is expected to be low, based on the number of whale sharks aggregating at Ningaloo and on the different migration paths that individuals may follow. It is expected that whale sharks may traverse the vicinity of the Operational Area during their migrations to and from Ningaloo Reef. However, presence of the whale shark within the area would be of a relatively short duration and not in significant numbers, given the main aggregations are recorded in coastal waters, particularly the Ningaloo Reef edge (DPW 2013, MPRA 2005).

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Table 4-5: Threatened and migratory fish, shark and ray species predicted to occur within the Operational Area and EMBA

Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Anoxypristis cuspidata	Narrow Sawfish	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Carcharhinus longimanus	Oceanic Whitetip Shark	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Carcharias taurus	Grey Nurse Shark	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Carcharias taurus (west coast population)	Grey Nurse Shark (west coast population)	Vulnerable	N/A	Species or species habitat likely to occur within area	Congregation or aggregation likely to occur within area
Carcharodon carcharias	White Shark	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Centrophorus uyato	Little Gulper Shark	Conservation Dependent	N/A	N/A	Species or species habitat likely to occur within area
Isurus oxyrinchus	Shortfin Mako	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Isurus paucus	Longfin Mako	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Lamna nasus	Porbeagle, Mackerel Shark	N/A	Migratory	N/A	Species or species habitat may occur within area
Mobula alfredi	Reef Manta Ray	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Mobula birostris	Giant Manta Ray	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Pristis clavata	Dwarf Sawfish	Vulnerable	Migratory	Species or species habitat likely to occur within area	Breeding likely to occur within area
Pristis pristis	Largetooth Sawfish	Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area

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Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Pristis zijsron	Green Sawfish	Vulnerable	Migratory	Species or species habitat likely to occur within area	Breeding likely to occur within area
Rhincodon typus	Whale Shark	Vulnerable	Migratory	Foraging, feeding or related behaviour likely to occur within area	Foraging, feeding or related behaviour likely to occur within area
Sphyrna lewini	Scalloped Hammerhead	Conservation Dependent	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area

Table 4-6: Fish, shark and ray BIAs overlapping the Operational Area and EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area (km)
Whale shark	Foraging (northward from Ningaloo along 200 m isobath)	Overlaps
	Foraging (high density prey)	250 km south-west

Source: DCCEEW, 2024d

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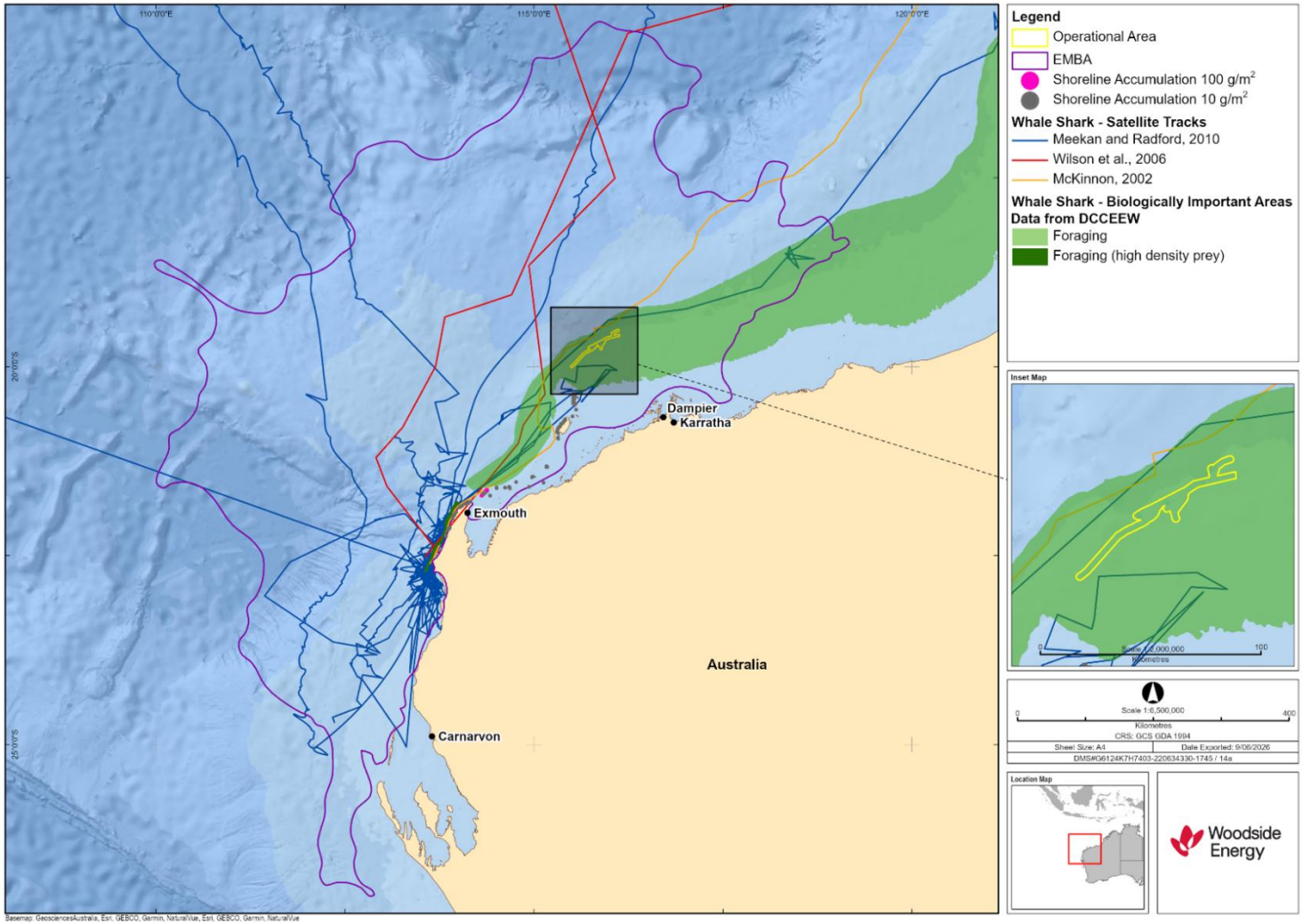


Figure 4-7: Whale shark BIAs overlapping the Operational Area and EMBA and tagged whale shark satellite tracks

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4.6.2 Marine reptiles

A total of eight EPBC Act listed threatened and migratory marine reptile species have been identified to potentially occur within the EMBA and Operational Area (Table 4-7).

An additional 17 EPBC Act-listed marine reptile species which do not have a threatened or migratory status are predicted to occur within the EMBA. The majority of these marine-listed species are sea snakes and are described in Appendix C. A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

The Operational Area overlaps the flatback turtle internesting BIA and internesting buffer BIA, and the internesting habitat critical to the survival of flatback turtle. Marine reptile BIAs that overlap the EMBA are presented in Figure 4-8 and described in Figure 4-8. Further description of BIAs is provided in Appendix C.

Habitat critical to the survival of the flatback turtle, green turtle, hawksbill turtle, and loggerhead turtle is overlapped by the EMBA as shown in Figure 4-9 and Table 4-9.

4.6.2.1 Flatback Turtle

Flatback turtle nesting on Barrow Island occurs between October and March, with peak nesting activity occurring between November and January (Commonwealth of Australia 2017a). On Barrow Island, nesting activity is concentrated on the east coast on sandy, low-sloped, low-energy beaches with wide, shallow intertidal zones (K. Pendoley 2005, Pendoley et al. 2014).

The Montebello Islands and Barrow Island are identified as nesting habitat critical to the survival of the species, as is the 60 km internesting buffer (Figure 4-8) around the Montebello Islands (Commonwealth of Australia 2017a).

Post-nesting satellite tracking indicates foraging occurs along the WA coast in water shallower than 130 m and within 315 km of shore (Commonwealth of Australia 2017a). However, the foraging ecology of post hatchling flatback turtles is currently unknown. Limited observations suggest they feed on small animals living in the water column (Commonwealth of Australia 2017a). During internesting turtles remain close to the nesting beach or rookery (Commonwealth of Australia 2017a).

A habitat suitability modelling study for internesting flatback turtles in the NWS region of WA (Whittock, Pendoley and Hamann 2016) was conducted to identify areas of suitable flatback turtle internesting habitat and determine overlap with identified industrial hazards. The study used a turtle tracking dataset of 47 nesting female turtles from five main rookeries in the NWS study area, including Barrow Island.

The results showed internesting flatback turtles from all rookeries remained within water depths of <44 m, with a mean depth of <10 m (Whittock, Pendoley and Hamann 2016). Results also showed internesting turtles from all rookeries remained within <28 km of the nearest coast, with a mean distance from the coast of <6.1 km.

The habitat suitability modelling study defined suitable flatback turtle internesting habitat as water depths of 0–16 m within 5–10 km of the coast. Unsuitable flatback turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Whittock, Pendoley and Hamann 2016). Given the water depths and distance from the coast within the Operational Area, the area is considered unsuitable for internesting flatback turtles.

Other previous studies (Dobbs 2007, Guinea, Sperling and Whiting 2006, Pendoley Environmental 2010) have also presented findings that internesting behaviour was only observed in water depths of <40 m. One of these studies (Pendoley Environmental 2010) further indicates that internesting flatback turtles have relatively shallow dives, with 85% of the time spent in ≤20 m water depth, of which most was spent in 5–10 m (27±2.7%) and 10–15 m (22.3±3.5%) water depths.

Although individuals may transit through and forage within the Operational Area, habitat typically associated with species aggregations is not present due to the distance offshore (138 km from mainland), and to nesting beaches (~30 km).

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Table 4-7: Threatened and migratory marine reptile species predicted to occur within the Operational Area and EMBA

Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Aipysurus apraefrontalis	Short-nosed Sea Snake	Critically Endangered	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Aipysurus foliosquama	Leaf-scaled Sea Snake	Critically Endangered	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Caretta caretta	Loggerhead Turtle	Endangered	Migratory	Breeding likely to occur within area	Breeding likely to occur within area
Chelonia mydas	Green Turtle	Vulnerable	Migratory	Breeding likely to occur within area	Breeding likely to occur within area
Crocodylus porosus	Salt-water Crocodile	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Dermochelys coriacea	Leatherback Turtle	Endangered	Migratory	Species or species habitat likely to occur within area	Breeding likely to occur within area
Eretmochelys imbricata	Hawksbill Turtle	Vulnerable	Migratory	Breeding likely to occur within area	Breeding likely to occur within area
Natator depressus	Flatback Turtle	Vulnerable	Migratory	Breeding likely to occur within area	Breeding likely to occur within area

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Table 4-8: Marine turtle BIAs overlapping the Operational Area and EMBA

Species	BIA type	Approx. distance and direction of BIA from Operational Area (km)
Flatback turtle	Reproduction (internesting buffer) (Montebello Island, Hermite Island, NW Island, Trimouille Island)	Overlaps
	Reproduction (interesting buffer) (Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island, Huay Island; Intercourse Island; Delambre Island; Thevernard Island – South coast; Dixon Island; West of Cape Lambert; Cape Thouin/Mundabullangana/Cowrie Beach)	30 km southeast (closest BIA to the Operational Area)
	Mating (Montebello Island, Hermite Island, NW Island, Trimouille Island); Coral reef habitat west of the Montebello group (Extends the entire length of Montebellos); Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula)	35 km south (closest BIA to the Operational Area)
	Nesting (Montebello Island, Hermite Island, NW Island, Trimouille Island; Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula); Thevenard Island – South coast)	35 km south (closest BIA to the Operational Area)
	Aggregation (Coral reef habitat west of the Montebello group (extends the entire length of Montebellos))	46 km south
	Foraging (Montebello Island, Hermite Island, NW Island, Trimouille Island; Coral reef habitat west of the Montebello group (extends the entire length of Montebellos); Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula))	35 km south (closest BIA to the Operational Area)
	Migration corridor (Dampier Archipelago (islands to the west of the Burrup Peninsula))	108 km southeast
Green turtle	Internesting buffer (Montebello Islands; Montebello Island, Hermite Island, NW Island, Trimouille Island; Middle Island, West Coast Barrow Island West Coast and North Coast; Dampier Archipelago (islands to the west of the Burrup Peninsula); Legendre Island; Huay Island; Delambre Island; North and South Muiron Island; North West Cape)	14 km south (closest BIA to the Operational Area)
	Mating (Montebello Islands; Montebello Island, Hermite Island, NW Island, Trimouille Island; Coral reef habitat west of the Montebello group (extends the entire length of Montebello islands); Middle Island; West Coast Barrow Island, West Coast and North Coast; Dampier Archipelago (islands to the west of the Burrup Peninsula)	34 km south (closest BIA to the Operational Area)
	Nesting (Montebello Islands; Montebello Island, Hermite Island, NW Island, Trimouille Island; Middle Island, West Coast Barrow Island, West Coast and North Coast; Dampier Archipelago (islands to the west of the Burrup Peninsula); North and South Muiron Island; North West Cape)	34 km south (closest BIA to the Operational Area)
	Aggregation (Coral reef habitat west of the Montebello group (extends the entire length of Montebellos))	46 km south
	Foraging (Montebello Islands; Montebello Island, Hermite Island, NW Island, Trimouille Island; Coral reef habitat west of the Montebello group (extends the entire length of Montebellos); Inshore tidal and shallow subtidal areas around Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula)	34 km south (closest BIA to the Operational Area)
	Basking (Middle Island. West Coast Barrow Island West Coast and North Coast)	70 km south

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Species	BIA type	Approx. distance and direction of BIA from Operational Area (km)
	Migration Corridor (Dampier Archipelago (islands to the west of the Burrup Peninsula))	108 km southeast
Hawksbill turtle	Internesting Buffer (Montebello Island, Hermite Island, NW Island, Trimouille Island; Ah chong and South East Island; Lowendal Island Group; Varanus Island; Barrow Island; Rosemary Island; Dampier Archipelago (islands to the west of the Burrup Peninsula); Delambre Island; Thevenard Island; Ningaloo coast and Jurabi coast	15 km south (closest BIA to the Operational Area)
	Mating (Montebello Islands, Hermite Island, NW Island, Trimouille Island; Lowendal Island Group; Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula)	35 km south (closest BIA to the Operational Area)
	Nesting (Montebello Islands, Hermite Island, NW Island, Trimouille Island; Ah chong and South East Island; Lowendal Island Group; Varanus Island; Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula); Delambre Island (and other Dampier Archipelago Islands); Thevenard Island; Ningaloo coast and Jurabi coast)	35km south (closest BIA to the Operational Area)
	Migration corridor (Dampier Archipelago (islands to the west of the Burrup Peninsula))	108 km southeast
	Foraging (Montebello Islands, Hermite Island, NW Island, Trimouille Island; Lowendal Island Group; Shallow water coral reef and artificial reef (pipeline) habitat of Barrow Island; Dampier Archipelago (islands to the west of the Burrup Peninsula))	35 km south
Loggerhead turtle	Internesting Buffer (Montebello Islands; Lowenthal Island; Rosemary Island; Cohen Island; Muiron Island; Ningaloo coast and Jurabi coast; Gnaraloo Bay; Dirk Hartog Island)	25 km south
	Nesting (Montebello Islands; Lowenthal Island; Muiron Island; Ningaloo coast and Jurabi coast)	45 km south

Table 4-9: Internesting habitat critical to the survival of the species overlapping the Operational Area and EMBA

Species	Location of habitat critical	Approx. distance and direction from Operational Area (km)
Flatback turtle	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island (60km internesting buffer).	Overlaps
	Dampier Archipelago, including Delambre Island and Hauy Island (60km internesting buffer)	43 km southeast
	Mundabullangana Beach (60km internesting buffer)	153 km southeast
Green turtle	Barrow Island, Montebello Islands, Serrier Island and Thevenard Island (20km internesting buffer).	18 km south
	Dampier Archipelago (20km internesting buffer).	83 km southeast

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Species	Location of habitat critical	Approx. distance and direction from Operational Area (km)
	Exmouth Gulf and Ningaloo coast (20km internesting buffer).	219 km south
Hawksbill turtle	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands (20km internesting buffer).	18 km south
	Dampier Archipelago, including Delambre Island and Rosemary Island (20km internesting buffer).	83 km southeast
Loggerhead turtle	Exmouth Gulf and Ningaloo coast (20km internesting buffer).	220 km south
	Gnaraloo Bay and beaches (20km internesting buffer).	426 km south
	Shark Bay, all coastal and island beaches out to the northern tip of Dirk Hartog Island (20km internesting buffer).	640 km south
Leatherback turtle	*No overlap – nesting located in Northern Territory and North Queensland*	

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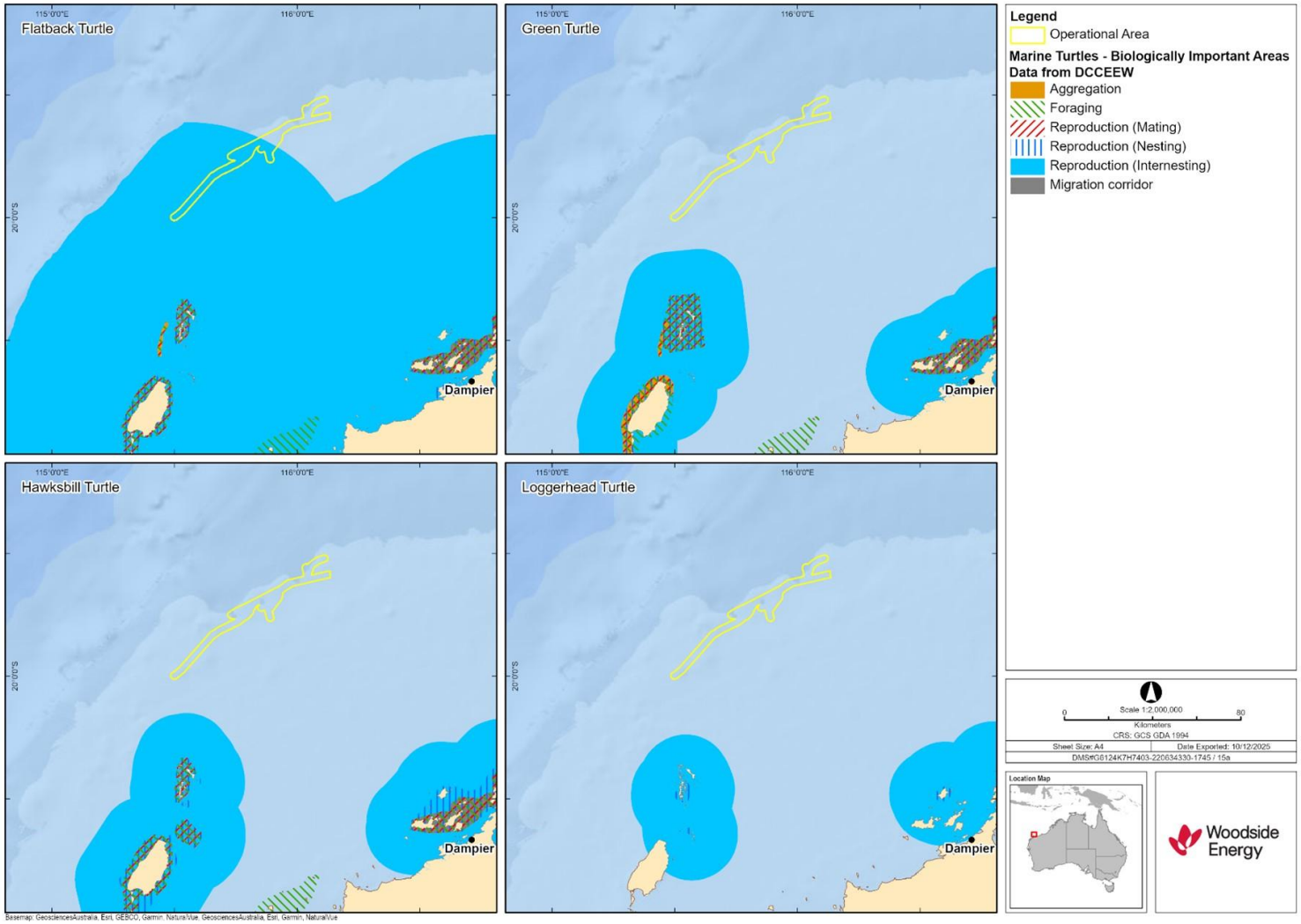


Figure 4-8: Marine turtle biologically important areas near the Operational Area

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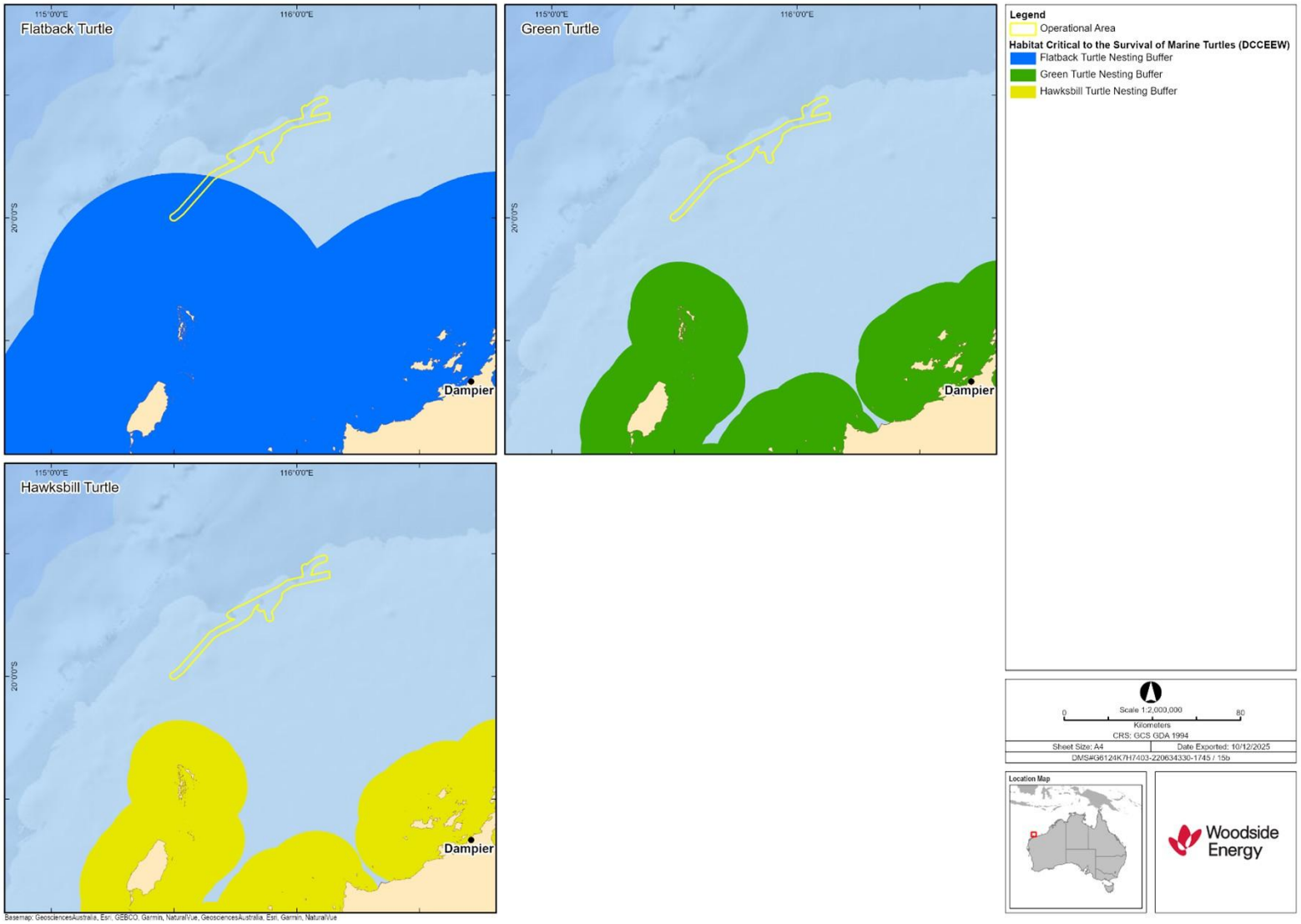


Figure 4-9: Habitat critical to the survival of marine turtles near the Operational Area

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4.6.3 Marine mammals

A total of 14 EPBC Act listed threatened and migratory marine mammal species have been identified as potentially occurring within the EMBA, of which 11 occur in the Operational Area (Table 4-10). Several threatened terrestrial mammal species were listed in the PMST report for the EMBA, but do not inhabit shorelines or rely on the marine environment for their diet, so are not included in Table 4-10. These included the northern quoll, golden bandicoot and rock wallaby, amongst other mammal species. A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

An additional 21 EPBC Act-listed marine mammal species which do not have a threatened or migratory status are predicted to occur within the EMBA. A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

The Operational Area does not overlap any BIAs for threatened or migratory marine mammal species. Marine mammal BIAs that overlap the EMBA are presented in Table 4-11, Figure 4-10 and Figure 4-11.

Further description of BIAs is provided in Appendix C.

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Table 4-10: Threatened and migratory marine mammal species predicted to occur within the Operational Area and EMBA

Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Balaenoptera bonaerensis	Antarctic Minke Whale	N/A	Migratory	N/A	Species or species habitat likely to occur within area
Balaenoptera borealis	Sei Whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni	Bryde's Whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Balaenoptera musculus	Blue Whale	Endangered	Migratory	Migration route known to occur within area	Migration route known to occur within area
Balaenoptera omurai	Omura's Whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Balaenoptera physalus	Fin Whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area
Dugong dugon	Dugong	N/A	Migratory	N/A	Species or species habitat likely to occur within area
Eubalaena australis	Southern Right Whale	Endangered	Migratory (as *Balaena glacialis australis*)	N/A	Species or species habitat likely to occur within area
Megaptera novaeangliae	Humpback Whale	N/A	Migratory	Breeding known to occur within area	Breeding known to occur within area
Orcaella heinsohni	Australian Snubfin Dolphin	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area
Orcinus orca	Killer Whale, Orca	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Physeter macrocephalus	Sperm Whale	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area

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Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Sousa sahulensis	Australian Humpback Dolphin	Vulnerable	Migratory (as *Sousa chinensis*)	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)	Spotted Bottlenose Dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area

Table 4-11: Marine mammal BIAs overlapping the EMBA

Species	BIA type	Approx. distance and direction from Operational Area (km)
Dugong	Breeding (Exmouth Gulf)	222 km south-west
	Calving (Exmouth Gulf)	222 km south-west
	Foraging (high density seagrass beds) (Exmouth Gulf)	222 km south-west
	Nursing (Exmouth Gulf)	222 km south-west
Humpback Whale	Migration (north to south) (The migration corridor extends from the coast to out to approximately 100km offshore in the Kimberley region extending south to North-west Cape. From North-west Cape to south of shark Bay the migration corridor is reduced to approximately 50 km)	15 km south-east
	Resting (Exmouth Gulf and Shark Bay)	218 km south-west
Pygmy Blue Whale	Migration (Augusta to Derby. Tend to pass along the shelf edge at depths of 500m to 1000m; appear close to coast in the Exmouth-Montebello Islands area on southern migration)	26 km north
	Foraging (Ningaloo)	260 km south-west
Southern Right Whale	Reproduction	222 km south-west
	Migration	235 km south-west

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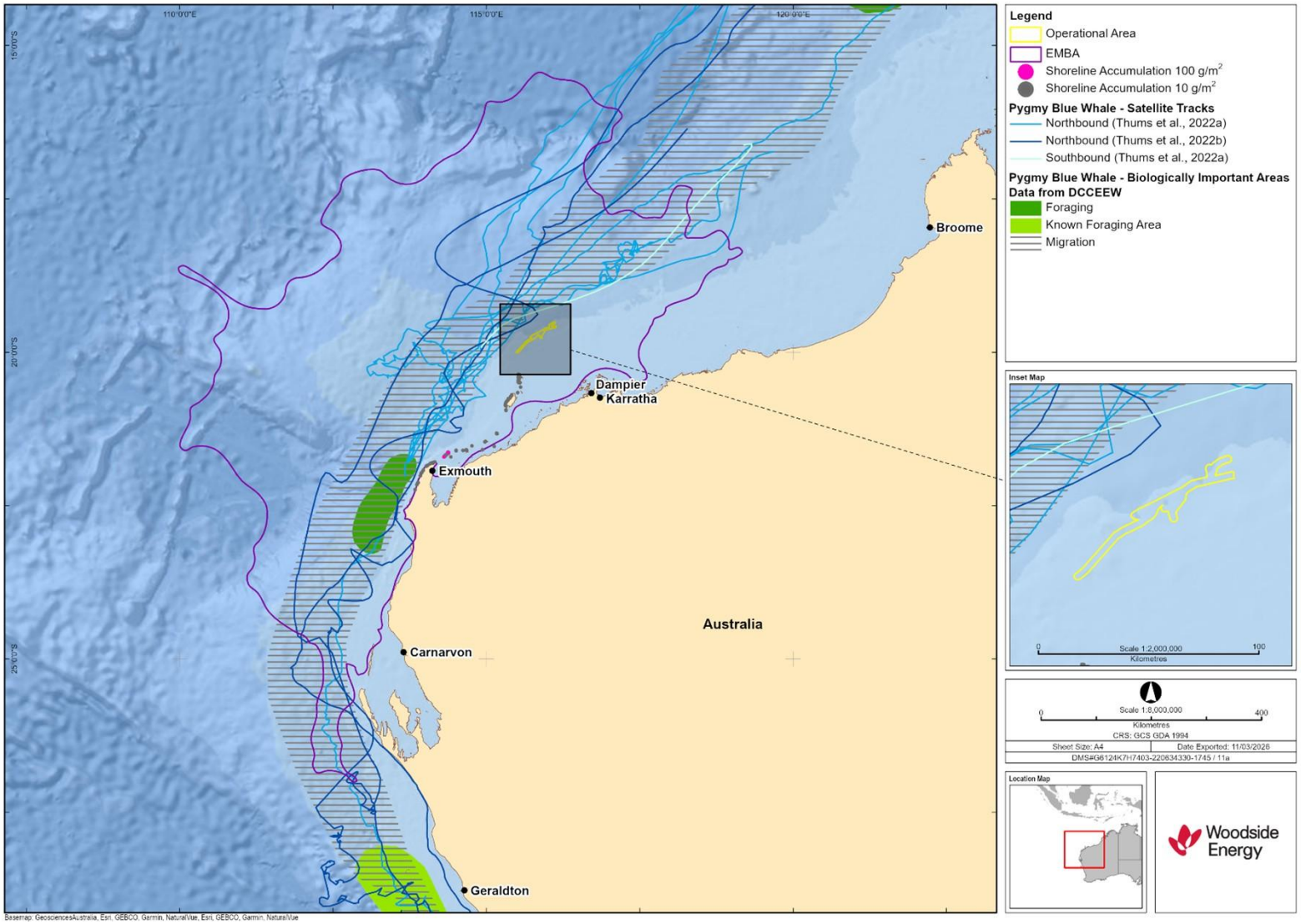


Figure 4-10: Pygmy blue whale BIAs overlapping the EMBA and tagged whale tracks for northbound migration (Source: DCCEEW 2024d)

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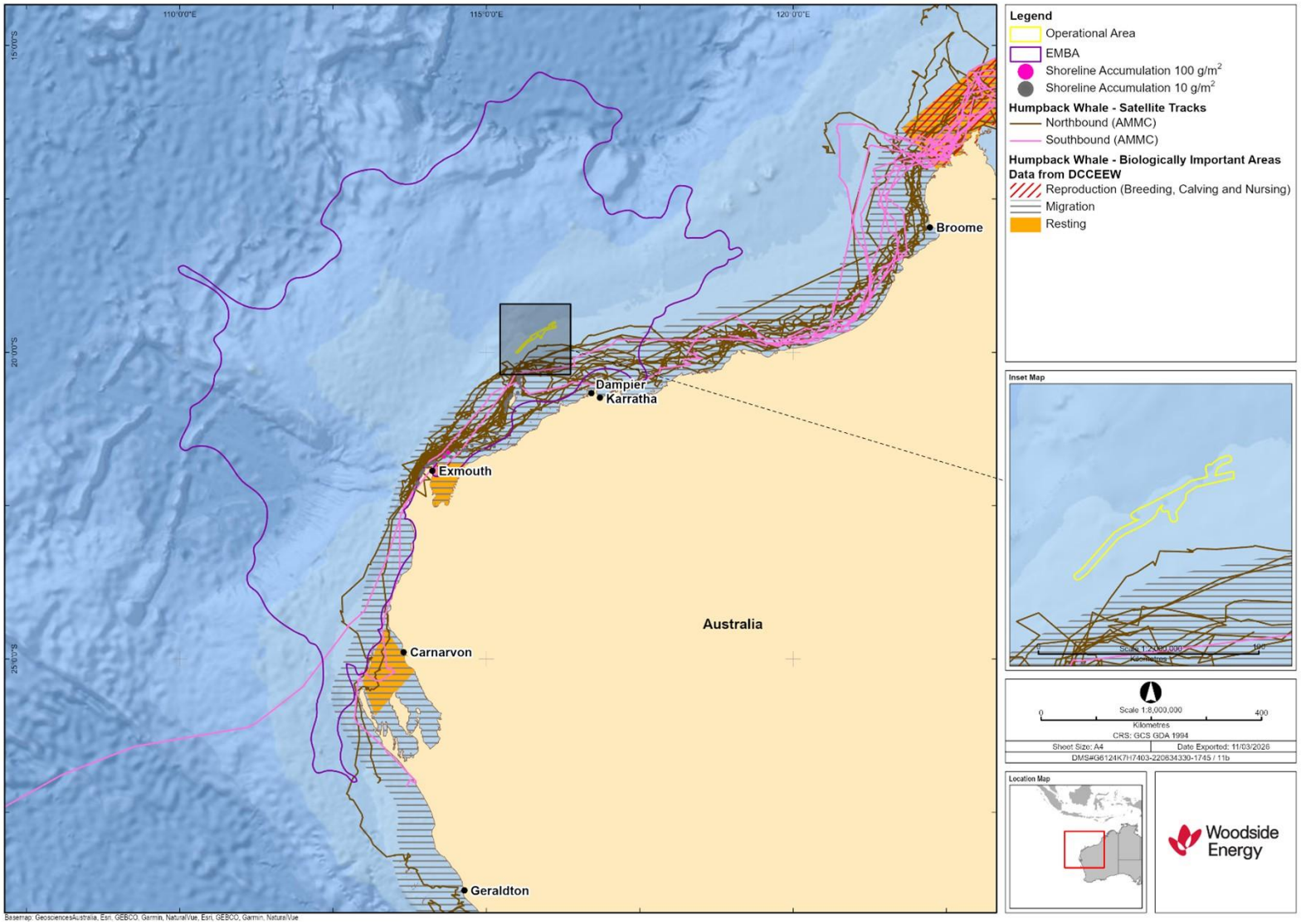


Figure 4-11: Humpback whale BIAs and tagged tracks overlapping the EMBA (Source: DCCEEW 2024d)

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4.6.4 Seabirds and migratory shorebirds

A total of 43 EPBC Act listed threatened seabirds and migratory shorebird species have been identified to potentially occur within the EMBA, of which 17 occur in the Operational Area (Table 4-12).

An additional eight EPBC Act-listed marine seabird and shorebird species which do not have a threatened or migratory status are recorded to occur within the EMBA. A full list of EPBC Act listed species identified in the PMST search is provided in Appendix D.

The Operational Area overlaps a breeding BIA for the Wedge-tailed shearwater (Table 4-12, Figure 4-12). BIAs that overlap the EMBA are presented in Table 4-12 and Figure 4-12.

Detailed descriptions of seabirds and migratory shorebirds in the EMBA are provided in Appendix C**.**

4.6.4.1 Wedge-tailed shearwater

The wedge-tailed shearwater (*Arena pacifica*) is a pelagic, marine seabird known from tropical and subtropical waters (DCCEEW 2024). Its distribution is widespread across the Indian and Pacific oceans with a global population of 2.6 million pairs. Of this, approximately one million pairs breed in Australia, most of which do so on islands in WA between Rottnest Island in the south to Ashmore Reef in the north (DCCEEW 2024).

Adults are absent from their breeding colonies during the interbreeding period and return from their tropical Indian Ocean over-wintering grounds from late June onwards to re-excavate their burrows (Pendoley Environmental 2019). This species is highly synchronous in timing of breeding; all eggs within a colony are laid within a ten-day period (Pendoley Environmental 2019). Once hatched, adults leave the burrows to forage locally during the day returning at night to feed chicks until they are ready to fledge (Nicholson 2002). Due to the high synchronicity in egg laying, fledging is restricted to the first two weeks of April (Nicholson 2002).

This species is seen in North West WA from June to April (DBCA 2017). The breeding season in the Pilbara region occurs between November and April (DBCA 2017). Breeding behaviours are typically nocturnal in wedge-tailed shearwaters.

Breeding behaviours are nocturnal in wedge-tailed shearwaters. Adults return to and depart the colony at night and fledglings depart the colony at night. In the lead up to fledging, chicks also leave their burrows to exercise their wings outside burrows. Known breeding locations in the NWMR include Forestier Island (Sable Island), Bedout Island, Dampier Archipelago, Passage Island, Lowendal Island, islands off Barrow Island (Mushroom, Double and Boodie islands), islands in the Onslow area (including Airlie, Bessieres, Serrurier, North and South Muiron and Locker islands), islands in Freycinet Estuary, and south Shark Bay (Slope, Friday, Lefebre, Charlie, Freycinet, Double and Baudin islands (DSEWPC 2012). This species forages relatively close to breeding islands and its diet consists of squid, fish and crustaceans (DSEWPC 2012), tracking studies found that foraging activities at sea were more frequent during the day compared with at night (Catry et al. 2009, Weimerskirch, de Grissac et al. 2020).

Wedge-tailed shearwaters breeding on the Muiron Island (north) undertook extensive foraging trips during the incubation period (1,200 – 1,400 km) and shorter trips during chick rearing (<300 km; Cannell, Hamilton and Driessen 2019). Longer foraging trips took individuals in a NW direction offshore towards oceanic seamounts. Conversely, the shorter tended to include waters to the west and NW of the Muiron Islands (Cannell, Hamilton and Driessen 2019). In addition to the Muiron Islands, this dual foraging strategy, whereby parents alternate or mix short and long trips, have been recorded in Wedge-tailed shearwaters breeding in the east of Australia (Peck and Congdon 2005), and New Caledonia (Weimerskirch, Le Corre, et al. 2005). However, divergent foraging strategies have been detected between colonies, which is linked to the proximity of colonies to high productivity waters (Peck and Congdon 2005, Weimerskirch, Le Corre, et al. 2005).

The breeding BIA of the wedge-tailed shearwater overlaps the Operational Area.

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Table 4-12: Threatened and migratory seabird and migratory shorebird species predicted to occur within the Operational Area and EMBA

Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Actitis hypoleucos	Common Sandpiper	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Anous stolidus	Common Noddy	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Anous tenuirostris melanops	Australian Lesser Noddy	Vulnerable	N/A	N/A	Species or species habitat may occur within area
Ardenna carneipes	Flesh-footed Shearwater	N/A	Migratory	N/A	Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica	Wedge-tailed Shearwater	N/A	Migratory	N/A	Breeding likely to occur within area
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Calidris canutus	Red Knot, Knot	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Calidris melanotos	Pectoral Sandpiper	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Calonectris leucomelas	Streaked Shearwater	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Charadrius leschenaultii	Greater Sand Plover	Vulnerable	Migratory	N/A	Species or species habitat likely to occur within area
Charadrius veredus	Oriental Plover	N/A	Migratory	N/A	Species or species habitat may occur within area
Diomedea amsterdamensis	Amsterdam Albatross	Endangered	Migratory	N/A	Species or species habitat likely to occur within area

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Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Diomedea exulans	Wandering Albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Fregata ariel	Lesser Frigatebird	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Fregata minor	Great Frigatebird	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Glareola maldivarum	Oriental Pratincole	N/A	Migratory	N/A	Species or species habitat may occur within area
Hydroprogne caspia	Caspian Tern	N/A	Migratory	N/A	Breeding likely to occur within area
Limnodromus semipalmatus	Asian Dowitcher	Vulnerable	Migratory	N/A	Species or species habitat likely to occur within area
Limosa lapponica	Bar-tailed Godwit	N/A	Migratory	N/A	Species or species habitat likely to occur within area
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	Endangered	N/A	N/A	Species or species habitat likely to occur within area
Macronectes giganteus	Southern Giant-Petrel	Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Macronectes halli	Northern Giant Petrel	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Numenius madagascariensis	Far Eastern Curlew	Critically Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Onychoprion anaethetus	Bridled Tern	N/A	Migratory	N/A	Breeding likely to occur within area
Pandion haliaetus	Osprey	N/A	Migratory	Species or species habitat may occur within area	Breeding likely to occur within area
Papasula abbotti	Abbott's Booby	Endangered	N/A	N/A	Species or species habitat may occur within area

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Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Phaethon lepturus	White-tailed Tropicbird	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Phaethon lepturus fulvus	Christmas Island White-tailed Tropicbird	Endangered	N/A	Species or species habitat may occur within area	Species or species habitat may occur within area
Phaethon rubricauda	Red-tailed Tropicbird	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Phaethon rubricauda westralis	Red-tailed Tropicbird (Indian Ocean)	Endangered	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Pterodroma mollis	Soft-plumaged Petrel	Vulnerable	N/A	N/A	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis	Australian Painted Snipe	Endangered	N/A	N/A	Species or species habitat likely to occur within area
Sterna dougallii	Roseate Tern	N/A	Migratory	N/A	Breeding likely to occur within area
Sternula albifrons	Little Tern	Vulnerable	Migratory	N/A	Breeding likely to occur within area
Sternula nereis nereis	Australian Fairy Tern	Vulnerable	N/A	Foraging, feeding or related behaviour likely to occur within area	Breeding likely to occur within area
Thalassarche carteri	Indian Yellow-nosed Albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalassarche cauta	Shy Albatross	Endangered	Migratory	N/A	Species or species habitat may occur within area
Thalassarche impavida	Campbell Albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalassarche melanophris	Black-browed Albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area

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Species name	Common name	EPBC Act (as per PMST report Appendix D)		Potential for interaction	
		Threatened status	***Migratory status***	***Operational Area***	***EMBA***
Thalassarche steadi	White-capped Albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalasseus bergii	Greater Crested Tern	N/A	Migratory	N/A	Breeding likely to occur within area
Tringa nebularia	Common Greenshank	Endangered	Migratory	N/A	Species or species habitat likely to occur within area

Table 4-13: Seabird and shorebird BIAs within the Operational Area and EMBA

Species	BIA type	Approx. distance and direction from Operational Area (km)
Wedge-tailed Shearwater	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps
Fairy Tern	Breeding (Pilbara and Gascoyne coasts and islands)	32 km south
	Foraging (Pilbara and Gascoyne coasts and islands)	32 km south
Roseate Tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	37 km south
Lesser Crested Tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	38 km south
Lesser Frigatebird	Breeding (Kimberley and Pilbara coasts and islands also Ashmore Reef)	221 km northeast
White-tailed Tropicbird	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	255 km northeast
Bridled Tern	Foraging (in high numbers) (West coast of Western Australia and around to Recherche Archipelago including offshore waters)	700 km south
Sooty Tern	Foraging (Timor Sea S to 14º30, off NW coast from Lacepede I SW to 117ºE including Abrolhos, Fisherman & Lancelin Islands, accidental on lower west coast to Hamelin Bay. Breeding visitor (late Aug - early May) Abrolhos & Lancelin Islands; casual winter (Nov - Apr) to Fisherman)	722 km

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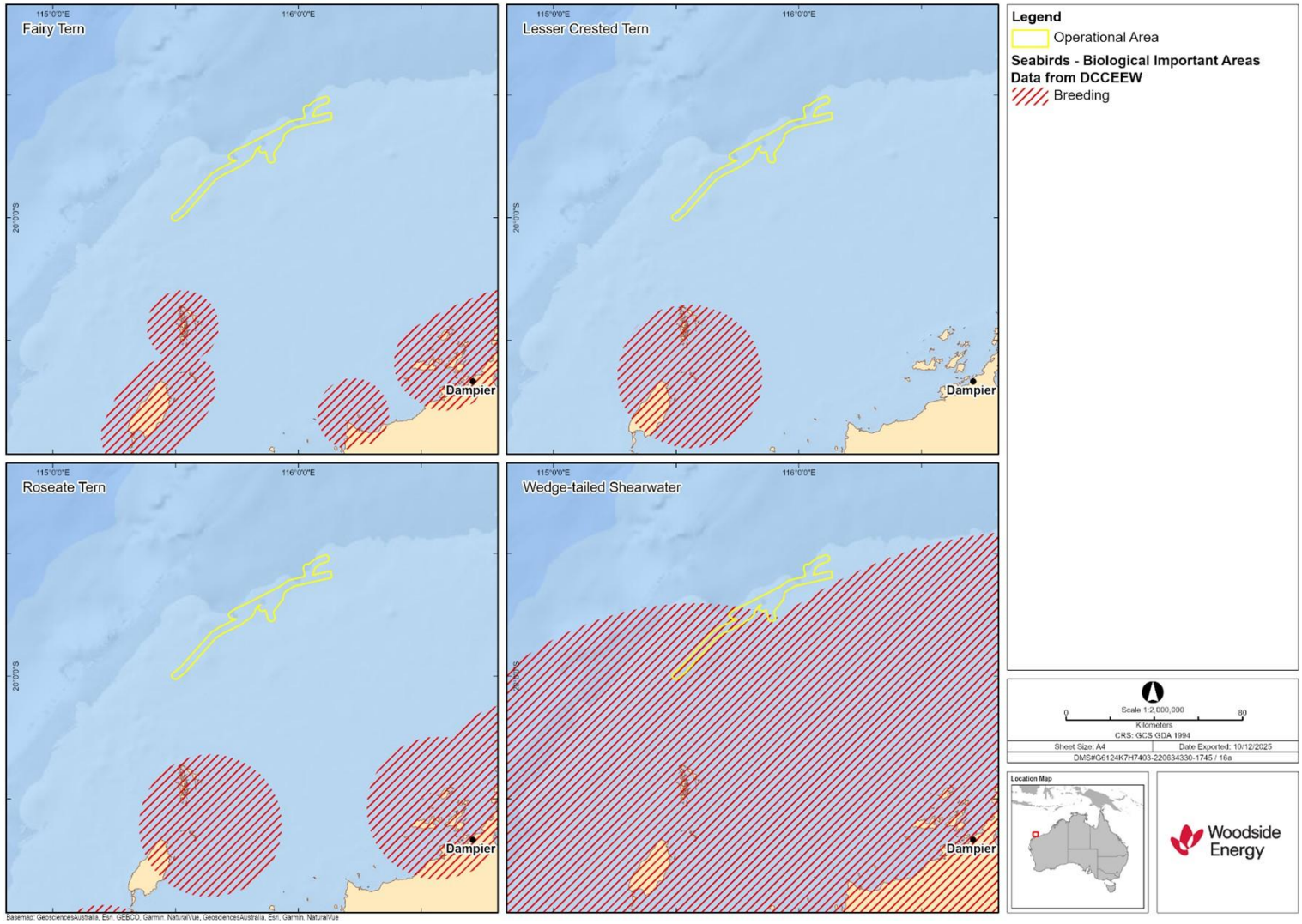


Figure 4-12: Seabird and migratory shorebird biologically important areas near the Operational Area

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4.6.5 Seasonal sensitivities for protected species

Seasonal sensitivities for EPBC migratory listed species identified as likely or known to occur within the Operational Area, and relevant to the defined planned impact pathways, are identified in Table 4-14. Seasonal sensitivities for species in the wider NWMR are described in Appendix C.

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Table 4-14: Key seasonal sensitivities for protected migratory species identified as occurring within the Operational Area

Species	Description of seasonality	January	February	March	April	May	June	July	August	September	October	November	December
Fish, sharks and rays													
Whale shark – foraging (northward from Ningaloo)	Whale shark foraging northward from Ningaloo in Spring[1] Migration along the north coast of WA also known to occur between July–November[2] Potential presence of whale sharks year-round at Ningaloo[3]												
Whale shark – foraging (high density prey, Ningaloo Reef)	Whale shark foraging (high density prey) Ningaloo April–June, Autumn[1] March–July[2] Potential presence of whale sharks year-round at Ningaloo[3]												
Dwarf sawfish – reproduction[1]	Potential to occur all seasons												
Dwarf sawfish – foraging[1]	Potential to occur all seasons												
Largetooth (freshwater) sawfish – reproduction (pupping)[1]	Pupping occurs from January to May												
Largetooth (freshwater) sawfish – foraging[1]													
Green sawfish (reproduction)[1]													
Green sawfish (foraging)[1]													
Marine mammals													
Fin whale[5]	Fin whale presence NWMR May–October												

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Species	Description of seasonality	January	February	March	April	May	June	July	August	September	October	November	December
	Migrating north from Cape Leewuin (SWMR) May–October Present offshore Dampier August–October												
Humpback whale – northern migration[6]	Range June–September [1 6 14] Peak July to August [7]												
Humpback whale – southern migration[7]	Range July–November. Peak August- October 6 7 8 14												
Humpback whale – reproduction (nursing, Kimberley coast)[8]	Reproduction (nursing, Kimberley coast) Winter [1] Breeding August–September [6 14] Calves present off Kimberley in October [9]												
Omura's whale	Limited data however sightings reported year-round [9]												
Pygmy blue whale – northern migration[10]	Pygmy blue whale northern migration April–August [1 6 11 12] Peak April–July [13] From the Perth Canyon (April/May) to the North West Shelf (June/July) [13]												
Pygmy blue whale – southern migration[11]	Migration October–December, possibly into January [1 6] Peak November–December [13]												
Southern right whale (calving/presence in NWMR)[12]	Calving and migratory presence in Exmouth Gulf (NWMR) June to September with peak months July and August 1												
Marine reptiles – marine turtle nesting [note: hatchling emergence is generally 6-8 weeks post-nesting activity]													
Green Turtle													
Ashmore Reef Stock (G-AR)[14]	Mating occurs Sep–Nov Nesting occurs year-round (peak Dec-Jan)												

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Species	Description of seasonality	January	February	March	April	May	June	July	August	September	October	November	December
	Hatching Sep - May												
Scott Reef-Browse Island Stock (G-ScBr)[1 4]	Mating: Oct Nesting: Nov–Mar (peak Jan–Feb) Hatching: Peak Mar–Apr												
NWS Stock (G-NWS)[1 4]	Mating: Sep–Dec Nesting: Nov–Mar (peak: Dec–Feb) Hatching: Jan–May (peak: Feb–Mar)												
Hawksbill Turtle													
Western Australia Stock (H-WA)[1 4]	Mating: Unknown Nesting: Nov–Mar (peak Jan) Hatching: Jan–May												
Flatback Turtle													
Cape Domett Stock (F-CD)[1 4]	Mating: year round Nesting: all year (peak: Aug–Sept) Hatching: all year												
South-west Kimberley Stock (F swKim)[1 4]	Mating: year round Nesting: all year (peak: Dec–Jan) Hatching: all year												
Pilbara Stock (F-Pil)[1 4]	Mating: Sep–Jan Nesting: Oct–Mar (peak: Nov–Jan) Hatching: Feb–Mar												

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Species	Description of seasonality	January	February	March	April	May	June	July	August	September	October	November	December
Unknown genetic stock Kimberley, Western Australia[1 4]	May to July												
Loggerhead Turtle													
Western Australia Stock (LH-WA)[1 4]	Mating: Unknown Nesting: Nov–Mar (peak Jan) Hatching: Jan–May												
Seabirds (high occurrence seabirds with designated BIAs[15])													
Wedge-tailed shearwater - breeding / foraging	Fledgling emergence (first two weeks of April)												
Australian lesser noddy	NWMR presence in non-breeding period Breeding – Ashmore Reef and Abrolhos, may forage in NWMR												
Common noddy – breeding													
Bridled tern – breeding and foraging													
Great frigatebird – breeding / foraging	Possibly present in NWMR in non-breeding and foraging in breeding season												
Lesser frigatebird – breeding / foraging	Possibly present in NWMR in non-breeding and foraging in breeding season												
Little tern – breeding / foraging	Maybe present in NWMR outside breeding season – foraging and resting												
Roseate tern – breeding													

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Species	Description of seasonality	January	February	March	April	May	June	July	August	September	October	November	December
Caspian tern – breeding	Dampier Archipelago and North-west Cape												
Greater crested tern													
White-tailed and red-tailed tropicbird – breeding	Largest breeding populations on Christmas Island												

Key	
	Species may be present in the Operational Area
	Peak period. Presence of animals is reliable and predictable each year
	Species not likely to be undertaking biologically important behaviour in NWMR (the species may still be present in the NWMR).

[1] *Biologically Important Areas (DCCEEW 2025b)*

[2] *Threatened Species Scientific Committee 2015a*

[3] *Norman et al. 2017*

[4] *Recovery Plan for Marine Turtles in Australia (CoA 2017a).*

[5] *Aulich et al. 2022*

[6] *DSEWPaC 2012*

[7] *Salgado Kent et al. 2012*

[8] *Irvine and Salgado Kent 2019*

[9] *Thums et al. 2018*

[10] *Cerchio et al. 2019*

[11] *CoA 2015a*

[12] *McCauley et al. 2018*

[13] *Thums et al. 2022*

[14] *Threatened Species Scientific Committee 2015b*

[15] *All seabird seasonality information derived from BIA metadata, scientific publications and expert opinion (Worley 2024)*

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4.7 Key ecological features

One KEF, the Ancient Coastline at 125 m Depth Contour, overlaps the Operational Area. KEFs within the Operational Area and EMBA are identified in Table 4-15 and described in Appendix C. Figure 4-13 shows the spatial overlap with KEFs and the Operational Area and EMBA.

Table 4-15: KEFs within the Operational Area and EMBA

Key ecological feature	Distance and direction from Operational Area to KEF (km)
Ancient Coastline at 125 m Depth Contour	Overlaps
Continental Slope Demersal Fish Communities	25 km west-southwest
Glomar Shoal	45.2 km east
Exmouth Plateau	122 km west
Canyons Linking the Cuvier Abyssal Plain and the Cape Range Peninsula	181 km southwest
Commonwealth Waters Adjacent to Ningaloo Reef	226 km southwest
Western Demersal Slope and associated Fish Communities of the Central Western Province	693 km southwest

4.7.1 Ancient Coastline at 125 m Depth Contour

The Ancient Coastline at 125 m Depth Contour KEF is recognised for its biodiversity values (unique sea-floor feature with ecological properties of regional significance), which apply to both the benthic and pelagic habitats within the feature (DSEWPC 2012).

Parts of the KEF, particularly where it exists as a rocky escarpment, are thought to provide biologically important habitats in areas otherwise dominated by soft sediments (DSEWPC 2012). The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient rich environment. Little is known about fauna associated with the hard substrate of the escarpment, but it is likely to include sponges, corals, crinoids, molluscs, echinoderms and other benthic invertebrates' representative of hard substrate fauna in the North West Shelf bioregion (DSEWPC 2012).

Although the KEF adds additional habitat types to a representative system, the habitat types are not unique to the coastline as they are widespread on the upper shelf (Falkner, et al. 2009).

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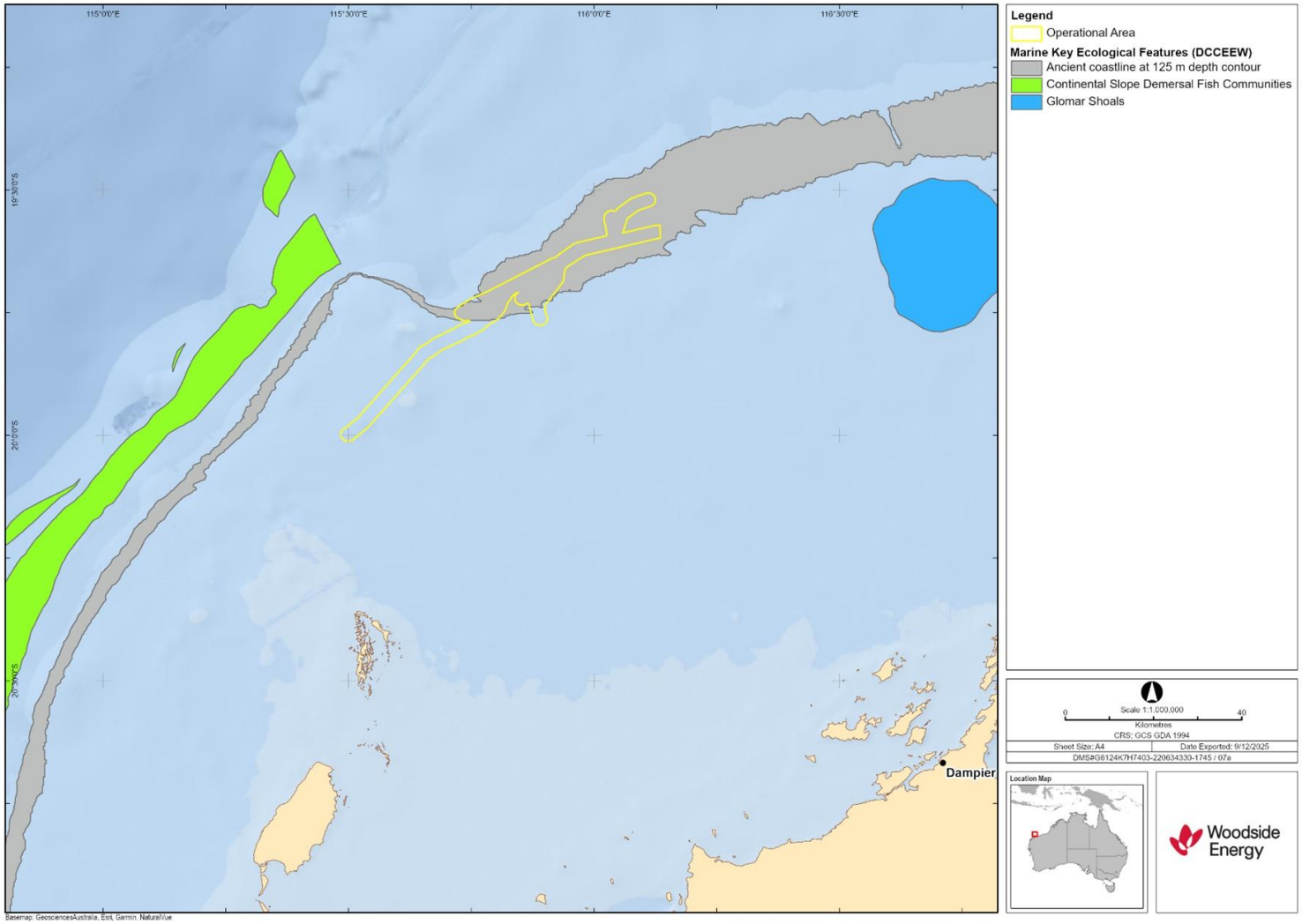


Figure 4-13: Key Ecological Features overlapping the Operational Area and EMBA

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4.8 Protected places

The Montebello Marine Park overlaps the Operational Area. Protected places within the Operational Area and EMBA are identified in Table 4-16 and presented in Figure 4-14. No Ramsar Wetlands were identified within the Operational Area or EMBA. Features which are overlapped by the Operational Area are described in further detail in the subheadings below.

Appendix C outlines the values and sensitivities of protected places and other sensitive areas in the Operational Area and EMBA.

Table 4-16: Established protected places and other sensitive areas overlapping the Operational Area and EMBA

	Distance and direction from Operational Area to protected place or sensitive area (km)	IUCN category* and relevant management zone overlapping the Operational Area and/or EMBA
AMPs		
Montebello Marine Park	Overlaps	Multiple Use Zone (VI)
Dampier Marine Park	153 km southeast	Multiple Use Zone (VI)
Argo-Rowley Terrace Marine Park	197 km northeast	Multiple Use Zone (VI)
Gascoyne Marine Park	197 km southwest	Habitat Protection Zone (IV)Multiple Use Zone (VI) National Park Zone (II)
Ningaloo Marine Park	229 km south	National Park Zone (II)Recreational Use Zone (IV)
Shark Bay Marine Park	535 km southwest	Multiple Use Zone (VI)
Carnarvon Canyon Marine Park	560 km southwest	Habitat Protection Zone (IV)
State Marine Parks and Nature Reserves		
Marine Parks		
Montebello Islands Marine Park	30 km south-southwest	National Park Zone (II) Recreational Use Zone (IV) Sanctuary Zone (IA) Special Purpose Zone (VI)
Barrow Island Marine Park	81 km south-southwest	Sanctuary Zone (IA)
Ningaloo Marine Park	227 km southwest	National Park Zone (II)Recreational Use Zone (IV) Sanctuary Zone (IA)
Marine Management Areas		
Barrow Island Marine Management Area	48 km south	Special Purpose Zone (VI)
Muiron Islands Marine Management Area	208 km southwest	Sanctuary Zone (IA) Special Purpose Zone (VI)
National Parks		
Cape Range National Park	263 km south	National Park Zone (II)
Conservation Parks		
Montebello Islands Conservation Park	38 km southwest	National Park Zone (II)
Nature Reserves		
Thevenard Island Nature Reserve	165 km south	Sanctuary Zone (IA)

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	Distance and direction from Operational Area to protected place or sensitive area (km)	IUCN category* and relevant management zone overlapping the Operational Area and/or EMBA
Other sensitive areas		
Unnamed Shoal	Overlaps	N/A
Wilcox Shoal	2.4 km southeast	N/A
Rankin Bank	3.7 km north-west	N/A
Glomar Shoal	51.5 km east	N/A

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

VI: Protected area with sustainable use of natural resources – allow human use but prohibits large scale development.

IUCN categories for marine parks are provided and, in brackets, the IUCN categories for specific zones within each marine park as assigned under the North-west Marine Parks Network Management Plan 2018 (DNP, 2018).

4.8.1 Montebello Marine Park

The Montebello Marine Park includes shallow shelf environments and provides protection for shelf and slope habitats, as well as pinnacle and terrace seabed features. The North-west Marine Parks Network Management Plan (DNP 2018) identifies the following values for the Montebello Marine Park:

- **natural values**: the marine park includes examples of ecosystems representative of the Northwest Shelf Province - a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities. A key ecological feature of the Marine Park is the Ancient Coastline at the 125 m Depth Contour. The marine park supports a range of species listed under the EPBC Act. Biologically important areas within the Marine Park include breeding habitat for seabirds, internesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks.
- **cultural values**: the Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara region. Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years.
- **heritage values**: no international, Commonwealth or national listings apply to the marine park, however it is located adjacent to the Western Australia Barrow Island and the Montebello–Barrow Island Marine Conservation Reserves which have been nominated for national heritage listing. The marine park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976*: (since updated to the *Underwater Cultural Heritage Act 2018*): Trial (wrecked in 1622), the earliest known shipwreck in Australian waters and Tanami (wrecked in 1935) (see Table 4-22).
- **social and economic values**: tourism, commercial fishing, mining and recreation are important activities in the marine park.

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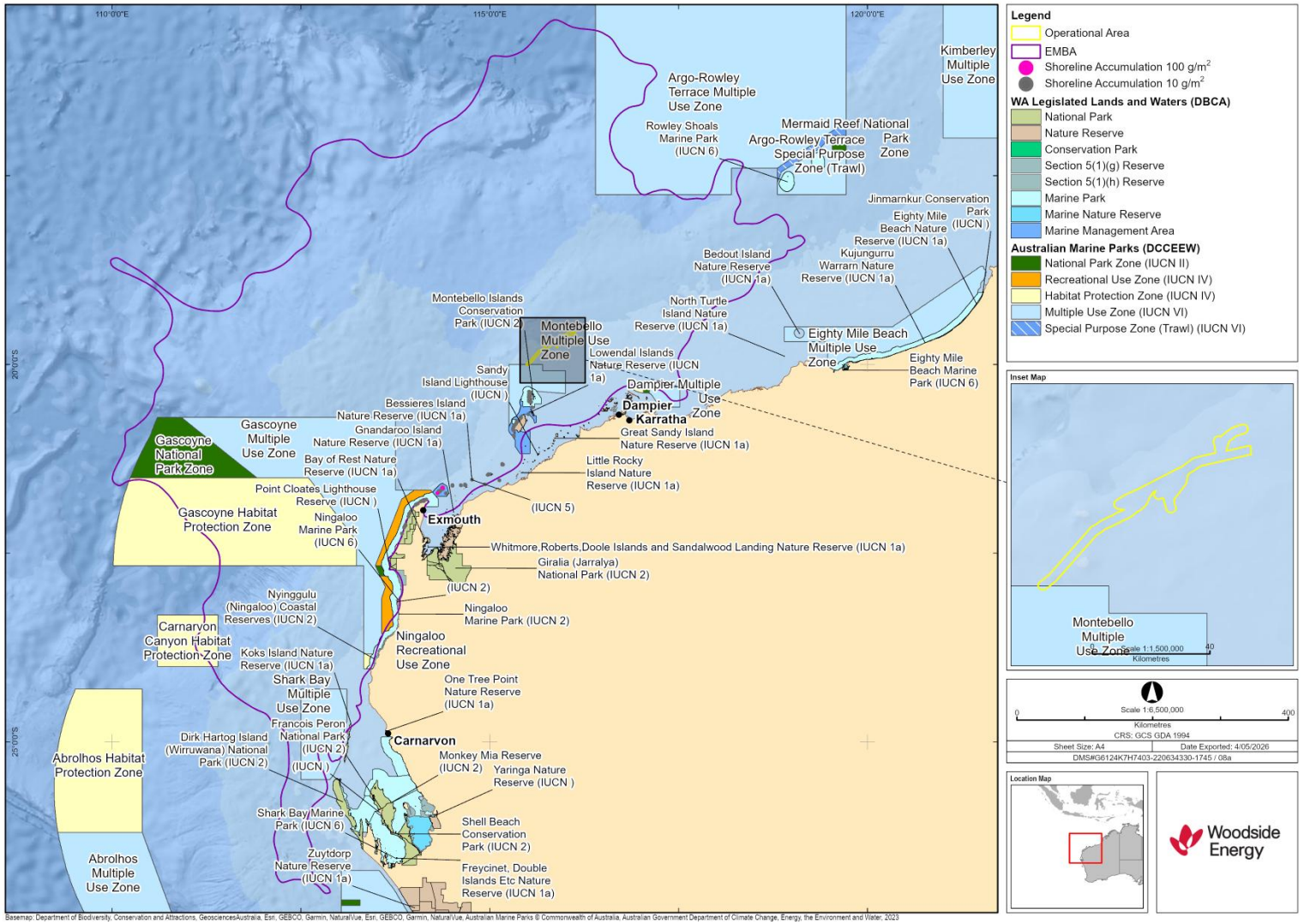


Figure 4-14: Marine Protected Areas overlapping the Operational Area and EMBA

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4.9 Cultural values and heritage

Woodside recognises the 'environment' for the purpose of the evaluation required under the Environment Regulations includes:

- the heritage value of places
- the social, economic and cultural features of the broader environment.

In this section, the heritage value of places within the Operational Area and EMBA and the cultural features of these areas are described. Description of cultural values and heritage as they relate to the wider North-west Marine Region (NWMR) are described in Appendix C.

4.9.1 Native Title

For the activity in this EP, there are six native title claims or determinations, overlapping the EMBA and nine that are coastally adjacent to the EMBA. Table 4-17 lists these; however, it does not differentiate between claims and determinations, as it is acknowledged that rights and interest may exist within either of these.

There are also seven ILUAs overlapping the EMBA and 25 that are coastally adjacent to the EMBA (Table 4-17).

As a starting point for understanding social and cultural features of the environment for Indigenous groups, Woodside uses the existing systems, such as native title, to identify Indigenous groups that may have functions, interests or activities that may be affected. To that end, Woodside identifies native title representative bodies and nominated representative entities (defined in Section 5.5), as well as native title claims, determinations and Indigenous Land Use Agreements (ILUAs) which the EMBA overlaps. While acknowledging that cultural features and heritage values may exist outside of the native title framework, native title claims, determinations and ILUAs are defined under the *Native Title Act 1993* (Cth). Woodside considers this to be the broadest extent over which Indigenous groups have claimed native title rights and interests.

Figure 4-15 shows the relevant native title claims or determinations and ILUAs relevant to the EMBA. Further description of how Woodside considers native tile rights and interest is provided in Appendix C.

4.9.2 Coastally adjacent Indigenous groups

To identify cultural features and heritage values which may exist outside of a native title claim, determination and ILUA areas, Woodside considers native title claims, determinations and ILUAs coastally adjacent to the EMBA to be an instructive means of identifying potentially relevant Indigenous groups to be consulted (see Section 5.3.4).

Table 4-17: Summary of native title claims, determinations and Indigenous land use agreements which overlap or are coastally adjacent to the EMBA

Claim/ determination/ ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Claim/ Determination			
Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation, Yinggarda Aboriginal Corporation	Yes	No
Kariyarra	Kariyarra Aboriginal Corporation	No	Yes
Malgana Part A	Malgana Aboriginal Corporation	Yes	No
Nanda People and Nanda #2	Nanda Aboriginal Corporation	No	Yes
Nanda People Part B, Malgana 2 and Malgana 3	Nanda Aboriginal Corporation, Malgana Aboriginal Corporation	No	Yes
Ngarla and Ngarla #2 (Determination Area A)	Wanparta Aboriginal Corporation	No	Yes

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Claim/ determination/ ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Ngarla Overlap Proceeding	Wanparta Aboriginal Corporation	No	Yes
Ngarla People (Mount Goldsworthy Lease Proceeding)	Wanparta Aboriginal Corporation	No	Yes
Ngarluma People	Ngarluma Aboriginal Corporation	No	Yes
Ngarluma/Yindjibarndi	Ngarluma Aboriginal Corporation, Yindjibarndi Aboriginal Corporation	Yes	No
Nhuwala /Thalanyji People	Buurabalayji Thalanyji Aboriginal Corporation	Yes	No
Nhuwala Claim Group	Represented by Yamatji Marlpa Aboriginal Corporation	Yes	No
Nyangumarta People (Part A)	Nyangumarta Warrarn Aboriginal Corporation	No	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation	Yes	No
ILUA			
Cape Preston Project Deed (YM Mardie ILUA)	Wirrawandi Aboriginal Corporation	Yes	No
KM & YM Indigenous Land Use Agreement 2018	Robe River Kuruma Aboriginal Corporation, Wirrawandi Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation	Yes	No
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	Yamatji Marlpa Aboriginal Corporation	Yes	No
Nganhurra Thanardi Garrbu Aboriginal Corporation Conservation Estate ILUA	Nganhurra Thanardi Garrbu Aboriginal Corporation	Yes	No
Ningaloo Conservation Estate ILUA	Nganhurra Thanardi Garrbu Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation	Yes	No
Alinta-Kariyarra Electricity Infrastructure ILUA	Yamatji Marlpa Aboriginal Corporation	No	Yes
Anketell Port, Infrastruture Corridor and Industrial Estates Agreement	Ngarluma Aboriginal Corporation	No	Yes
Brickhouse and Yinggarda Aboriginal Corporation ILUA	Yinggarda Aboriginal Corporation	Yes	No
Bush Heritage Hamelin Regeneration Project ILUA	Malgana Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation	Yes	No
Cape Preston West Export Facility	Wirrawandi Aboriginal Corporation	No	Yes
FMG - Kariyarra Land Access ILUA	Yamatji Marlpa Aboriginal Corporation	No	Yes
Kariyarra and State ILUA	Kariyarra Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation	No	Yes

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Claim/ determination/ ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally adjacent to the EMBA
Macedon ILUA	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Malgana Aboriginal Corporation Conservation Estate ILUA	Malgana Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation	No	Yes
Malgana Tamala Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Malgana Woodleigh Carbla Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Malgana Wooramel Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Malgana Yaringa Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Nanda Conservation Estate ILUA	Nanda Aboriginal Corporation	No	Yes
Ngarla Pastoral ILUA	Wanparta Aboriginal Corporation	No	Yes
Ngarla PBC KSCS ILUA	Wanparta Aboriginal Corporation	No	Yes
Ngarluma and Woodside Power Project ILUA	Ngarluma Aboriginal Corporation	No	Yes
Nyangumarta PBC KSCS ILUA	Nyangumarta Warrarn Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation	No	Yes
Nyangumarta Warrarn Aboriginal Corporation & Wallal Downs Pastoral Lease ILUA	Nyangumarta Warrarn Aboriginal Corporation	No	Yes
Onslow Iron Project Haulage Road ILUA	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Pardoo Beef Corporation Homestead Precinct Project ILUA (Body Corporate) 2024	Wanparta Aboriginal Corporation	No	Yes
Pardoo Beef Corporation Irrigated Agriculture Project ILUA (Body Corporate) 2020	Wanparta Aboriginal Corporation	No	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma Aboriginal Corporation, Yamatji Marlpa Aboriginal Corporation,	No	Yes
RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement)	Ngarluma Aboriginal Corporation	No	Yes
Thalanyji and Minderoo Pastoral ILUA	Buurabalayji Thalanyji Aboriginal Corporation	No	Yes
Wickham Motorcross ILUA	Ngarluma Aboriginal Corporation	No	Yes

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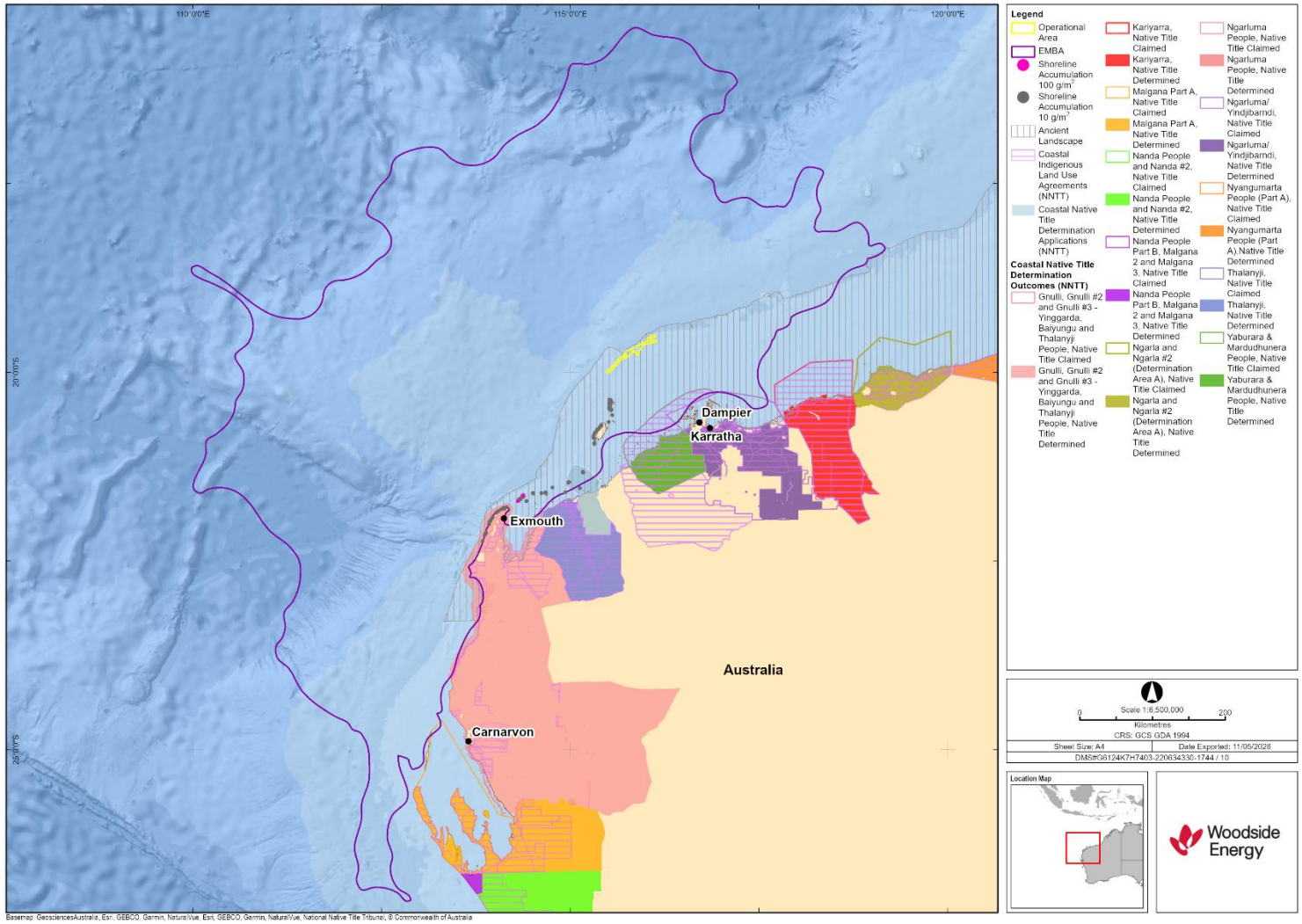


Figure 4-15: Operational Area and socio- cultural hydrocarbon thresholds in relation to Native Title Claims, Determinations and Indigenous Land Use Agreements

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4.9.3 Marine parks

Woodside undertakes an assessment of cultural values within Marine Park Management Plans where the Operational Area or EMBA overlaps a Marine Park.

Woodside considers the management plans of marine parks that overlap the Operational Area and the EMBA to determine whether cultural features and heritage values have been identified and whether there are specified Traditional Custodians or representative bodies referenced to contact regarding potential cultural features and heritage values. For completeness, Woodside considers cultural features and heritage values identified in the management plans, where EP relevant Traditional Custodians or representative bodies are represented. These values are outlined in Table 4-19.

The Operational Area overlaps the Montebello Marine Park. The EMBA overlaps with features of the following Commonwealth Australian Marine Parks:

- Argo-Rowley Terrace Marine Park
- Carnarvon Canyon Marine Park
- Dampier Marine Park
- Gascoyne Marine Park
- Ningaloo Marine Park
- Shark Bay Marine Park.

These marine parks are managed under the North-west Marine Parks Network Management Plan (DNP 2018).

The EMBA overlaps a further eight State protected areas. Where these plans specify identify representative bodies who may hold knowledge of heritage values or cultural features – including but not limited to Registered Native Title Bodies Corporate – these bodies are consulted (Section 5.5 and Appendix F). Consultation with these group(s) may identify heritage values and cultural features beyond those addressed in the marine park management plans. Identifiable representative bodies were specified for the marine parks overlapped by the EMBA (Table 4-18).

The State Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015: Management Plan Number 52 (MPRA and CALM 2005) notes the aesthetic values of the seascape as a cultural value and that “Panoramic vistas of turquoise lagoon waters, reefs, beaches, breaking surf and the blue open ocean beyond the reef line are major attractions of the reserves.” In particular, the plan notes that “Inappropriate structures along the coastline, on the islands and in the surrounding waters have the potential to degrade the aesthetic values of the reserves. Coastal developments and maritime infrastructure projects must therefore be planned with careful consideration of this issue.” As the activity described in this EP does not include the addition of any structures within these parks, no impacts on the aesthetic values of these parks are anticipated.

A number of management plans for the State Marine Parks also note Indigenous and maritime heritage within the marine parks. These are addressed in Section 4.9.5.3.

Table 4-18: Summary of the Operational Area and EMBA overlap with Commonwealth and State Marine Park Management Plan areas

Marine Park Management Plan	Operational Area overlap	EMBA overlap	Specified bodies
Commonwealth Marine Park Management Plan			
Argo-Rowley Terrace Marine Park	No	Yes	No identifiable body specified
Carnarvon Canyon Marine Park	No	Yes	No identifiable body specified
Dampier Marine Park	No	Yes	Yamatji Marlpa Aboriginal Corporation
Montebello Marine Park	Yes	Yes	Yamatji Marlpa Aboriginal Corporation

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Marine Park Management Plan	Operational Area overlap	EMBA overlap	Specified bodies
Ningaloo Marine Park	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation Yamatji Marlpa Aboriginal Corporation
Shark Bay Marine Park	No	Yes	Yamatji Marlpa Aboriginal Corporation
State Marine Park Management Plan			
Barrow Island Marine Park	No	Yes	No identifiable body specified
Montebello Islands Marine Park	No	Yes	No identifiable body specified
Ningaloo Marine Park	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation
Marine Management Areas			
Barrow Island Marine Management Area	No	Yes	No identifiable body specified
Muiron Islands Marine Management Area	No	Yes	Nganhurra Thanardi Garrbu Aboriginal Corporation
National Park			
Cape Range National Park	No	Yes	Yamatji Marlpa Aboriginal Corporation
Conservation Parks			
Montebello Islands Conservation Park	No	Yes	No identifiable body specified
Nature Reserves			
Thevenard Island Nature Reserve	No	Yes	No identifiable body specified

4.9.4 Indigenous protected areas

Indigenous Protected Areas (IPAs) are areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government.

No IPAs overlap the Operational Area or EMBA.

IPAs within the broader NWMR are described in Appendix C.

4.9.5 Sea Country values

Sea Country values of marine ecosystems are further described in Appendix C. An impact to marine ecosystems has the potential to impact cultural values where the impact is detectable within Sea Country. Potential impacts to these cultural values are assessed in Section 6.

Woodside initiates consultation on cultural values of Sea Country where Traditional Custodians or representative institutions are identified, or self-identify, as relevant persons.

Cultural features or heritage values related to marine species within the Operational Area or EMBA raised by Traditional Custodians in the course of preparing the EP have been outlined in Table 4-20. Values identified in publicly available literature are summarised in Table 4-19.

4.9.5.1 Desktop assessment of Sea Country values

Publicly available sources were assessed for any records of previously identified Sea Country values or cultural features that may overlap with the EMBA or Operational Area. Where cultural features or Sea Country values were identified these are summarised in Table 4-19 according to the Indigenous groups (where identified or inferable) who hold these values.

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Table 4-19: Cultural features and heritage values identified in publicly available literature

Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
Gnulli (Baiyungu, Thalanyji, Yinggarda)	Feature: resources including marine animals.	FCA (2019)	Possible (unspecified)	Possible (unspecified)
	Value: Traditional Knowledge Value: Access to Country *Traditional knowledge holds that ancestors live on the land and in the water. Therefore, Indigenous people have obligations to access and care for these places (e.g., keeping them clean).*		Possible (unspecified)	Possible (unspecified)
	Feature: Archaeological Sites *Heritage sites in the Ningaloo region include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.*	DBCA (2020)	No	Possible (Shoreline accumulation only)
	Feature: resources including • gajalbu (emu) (1) • bundgurdi (kangaroo) (2) • bardurra (bush turkey) (3) • majun (marine turtles) (4) • bundgurdi (kangaroo) (5) • fish (6) • shellfish (7) • plants (8)		Possible (4, 6 - 8)	Possible (4, 6 - 8)
			No (all other values)	No (all other values)
	Feature: resources including • mangrove crabs • gastropods • shellfish	Morse (1993)	No	Possible (all)
			Possible (all other values)	

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	• turtle			
Kariyarra	Value: traditional knowledge recalls that a salt water serpent lives in the sea and brings fish to shore.	Zaunmayr (2016)	Possible (unspecified)	Possible (unspecified)
Malgana	Value: Shark Bay	Shark Bay (2025)	No	No
	Value: Turtles (buyungurramutha)		Possible	Possible
	Value: Stromatolites *They are our old people; they carry spirits of our Malgana ancestors. Removing them for scientific purposes makes us feel sad.*		No	No
	Feature: resources including • bird eggs (shags [cormorants], seagull, divers)	Oxenham on behalf of the Malanga People v State of Western Australia (2018)	No	No
	• turtle eggs		No	No
	• dugongs		No	Possible
	• turtle		Possible	Possible
	• mullet, bluebone, whiting, snapper		Possible	Possible
	• oysters, mussels, crabs, prawns, scallops, cockles, little 'redies', black snapper		Possible	Possible
	Value: access to Country		Possible (unspecified)	Possible (unspecified)
	Feature: resources including dugong, green and loggerhead turtles and sharks.	Statton et al. (2021)	Possible (turtles, sharks)	Possible (all)
	Value: traditional knowledge maintains records of freshwater seeps in the submerged landscape.		Possible (unspecified)	Possible (unspecified)
	Feature: green sea turtles, dugongs, shags and bottlenose dolphins are species of cultural significance.	Malgana Land and Sea Management et al. (2021)	Possible No (dugongs)	Possible (all values)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: sharing and controlling the sharing of knowledge. *Sustaining the roles of different knowledge holders and Indigenous knowledge and the decision-making systems that support relationships to Country are essential considerations in two-way learning and sharing research partnership. …Some information has disappeared (from past work with external actors). Traditional Owners to look after our Country first.*	Lyons et al. (2021)	Possible (unspecified)	Possible (unspecified)
	Value: Transfer of Knowledge to younger generation		Possible (unspecified)	Possible (unspecified)
	Value: Fishing *Fishermen are the older people in the knowledge system, their knowledge comes from the old ways and cultural learning in their ways. The rangers, the younger generation, are learning the knowledge from the elders.*		No	Possible (locations unspecified)
Murujuga Aboriginal Corporation representing Ngarda-Ngarli people (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi) (MAC)	Value: Mermaid Sound Value: Murujuga (Dampier Peninsula) *"all living things in Mermaid Sound are connected and important…Mermaid Sound and Dampier Archipelago (Murujuga) is considered one place where the entire environment and all ecosystems hold both cultural and environmental value".*	Woodside (2023)	No No	No No
	The following fauna, communities and habitats were identified as being culturally important:		Possible	Possible (all values)
	• whales, and particularly Humpback whales		Possible	
	• dugongs		No	
	• fish		Possible	
	• sea snakes		No	
	• turtles		Possible	
	• squid		Possible	
	• corals		No	

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	• seagrass		No	
Nanda	Value: Connection to Country	Kabarri visitor centre	Possible (unspecified)	Possible (unspecified)
	Value: Dreamtime Stories (mythical serpent emerges at Kalbarri Coastal Cliffs)		Possible (unspecified)	Possible (unspecified)
	Feature: Red sandstone outcrops		No	No
	Feature: Fresh water springs		No	No
	Value: Archaeological sites		No	Possible (submerged)
	Feature: Kalbarri Ocean Cliffs	Hawkins (n.d)	No	No
	Value: Mythological/Creation Stories		Possible (unspecified)	Possible (unspecified)
Ngarluma	Value: Manggan (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.	Director of National Parks (2018)	Possible (unspecified)	Possible (unspecified)
Ngarluma and Yindjibarndi	Value: Creation Spirits *"In our Law it is said that in the beginning the sky was very low. When the creation spirits got up from the ground, they lifted the sky and the world out of the sea"*	Rijavec (2004)	Possible (unspecified)	Possible (unspecified)
	Value: Submerged Landscape *"sea as an inseparable extension of the land"*	Ward et al. (2022)	Yes	Yes
	Value: Songlines Features: Rock Art *"Songlines are like historical events captured in a few different ways, through storytelling, rock art, songs and dance, and in the landmarks themselves," says…a Ngarluma and Yindjibarndi man.* *… well-known Seven Sisters Dreaming story traces a songline that originates on one of the Dampier Archipelago's islands and finishes at the Three Sisters in NSW's Blue Mountains.*	Australian Broadcasting Corporation (2017)	Possible No	Possible Unlikely (submerged only)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value Mackerel Islands Value: Songlines *From here I depart for the Mackerel Islands, a cluster of isles and atolls that lie 22 kilometres off the coast. Aboriginal people followed songlines here until about 8000 years ago, when the landforms were separated from the mainland.* *The Warlu Way, which leads to Karijini, follows a songline created by a Dreamtime sea serpent, or warlu.*		No Possible (unspecified)	Possible (shoreline accumulation only) Possible (unspecified)
	Value: Built heritage		No	No
	Value: Sea Country Value: Rights and responsibilities over sea country *"Sea country is valued for Indigenous cultural identity, health and wellbeing."*	Australian Marine Parks (2018)	Possible (unspecified)	Possible (unspecified)
	Value: Songlines *It is recognised that spiritual corridors extend from terrestrial areas into nearshore and offshore waters, a number of marine animals are totems for Indigenous people, and that songlines pass through marine parks.*		Possible (unspecified)	Possible (unspecified)
	Feature: Submerged Fish Traps *…evidence from Traditional Owners that submerged fish traps are present along drowned waterways throughout the archipelago.*	Leach (2021)	No	Possible
	Value: Archaeological sites Feature: Shell midden sites on coast		No	Possible (shoreline accumulation only)
	Value: Barrow Island and Montebello Islands Feature: Submerged Archaeological Sites *The main study sites of Barrow Island and the Montebello Islands on the North West Shelf lie in the northern Carnarvon bioregion...The limestone islands provide shelters and caves with excellent preservation for archaeological assemblages*	Dortch et al. (2019)	No	Possible (shoreline accumulation only) Possible

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Boodie Cave, on the north-western coast of Barrow Island, is optimally positioned near the edge of the Australian continental shelf to infer past use of the drowned coastal plains. *Early Holocene assemblages are rich and contain marine faunal remains including fish, turtle, marine mammal, crocodile, crab and sea urchin.* *We conclude that the…record represents a continuation of a much older coastal economy ...on the now drowned continental shelf.*			
	Value: Murujuga Cultural Landscape *"The Dampier Archipelago now generally known as Murujuga is a significant rock art province in northwestern Australia that documents the Pleistocene–Holocene arid-maritime transition in the cultural landscape."* *"The region today is within the jurisdiction of Murujuga Aboriginal Corporation who co-manage the Murjuga National Park on behalf of the Ngarluma Yinddarbarndi, the Yaburara Mardudhunera and Wonggg-tt-tto peoples."*		No	No
	Value: Archaeological Sites/ Material Feature: Cape Range and Montebello Islands *...rock art, shell middens, tools, stone artefacts that continue to demonstrate the use of the islands well before the inundation of the last Ice Age. Example of coastal people's patterns ....report on ,sea urchin spines as evidence of intertidal zone exploitation by groups during low tide, faunal remains of species found in other archaeological assemblages from Cape Range and Montebello Islands.*	McDonald et al. 2022	No	Possible (shoreline accumulation only) Possible (Submerged only)
Unspecified	Feature: the ocean can include sacred sites and Songlines.	Smyth (2008)	Possible (unspecified)	Possible (unspecified)
	Value: people have kin relationships to important animals, plants tides and currents.		Possible (unspecified)	Possible (unspecified)
	Feature: archaeological sites in submerged landscapes.	Crabtree et al. (2021)	Possible	Possible (No seabed disturbance outside of OA)
	Value: Sea Country has customary law defining ownership and management rights and responsibilities.	Muller (2008)	Possible (unspecified)	Possible (unspecified)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: knowledge of Sea Country	Kearney et al (2023)	Possible (unspecified)	Possible (unspecified)
	Value: connection to Sea Country		Possible (unspecified)	Possible (unspecified)
	Value: care for Sea Country		Possible (unspecified)	Possible (unspecified)
	Value: the extent of Sea Country is determined by the travels of dreaming ancestors. This is recorded and conveyed through songlines.		Possible (unspecified)	Possible (unspecified)
	Feature: archaeological sites indicate that islands were occupied prior to sea level rise.	DBCA (2020)	No	Possible (submerged only)
	Value: Sea Country includes values, places, resources, stories and cultural obligations.	Smyth (2007)	Possible (unspecified)	Possible (unspecified)
	Value: activities relating to resources included: • dugong hunting (1) • turtle hunting (2) • turtle egg collecting (3) • seabird egg collecting (4) • spearing fish (5) • reef trapping fish (6) • herding fish (7) • line fishing (8) • collecting fish in stone fish traps (9) • poisoning fish (10) • gathering shellfish and other marine resources. (11)		No (1, 3 and 4) Unlikely (all other activities)	No (3 and 4) Possible (all other activities)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: people have kinship relationships with every plant and animal.	Juluwarlu Aboriginal Corporation (2004)	Possible (unspecified)	Possible (unspecified)
	Value: certain species, including fish and seafood, must not be eaten during initiation rituals due to their sacredness to the creation being Barrimirndi. Breaking this law may lead to cyclones.		Unlikely (unspecified)	Unlikely (unspecified)
	Feature: tangible and intangible heritage.	Macfarlane and McConnell (2017)	Possible (unspecified)	Possible (unspecified)
	Feature: archaeological evidence of varied occupation and adaptation.		Possible (submerged)	Possible (submerged)
	Value: a distinct way of life centred around the use of limited water and coastal resources.		Possible (unspecified)	Possible (unspecified)
	Feature: Potential for UCH in Bonaparte basin (Kimberly and Arhnem Land)	Norman et al. (2024)	No	No
	Value: Sea Country *The terms 'Sea Country' or 'Saltwater Country' refer to coastal, island and marine environments that together make up the traditional estates of maritime Indigenous groups in Australia (Smyth 1997):* *The ocean, or saltwater country, is not additional to a clan estate on land, it is inseparable from it. As on land, saltwater country contains evidence of the Dreamtime events by which all geographic features, animals, plants and people were created. It contains sacred sites, often related to these creation events, and it contains tracks, or Songlines along which mythological beings travelled during the Dreamtime or creation period. The sea, like the land, is integral to the identity of each clan, and clan members have a kin relationship to the important marine animals, plants, tides and currents."*	Dermot (2008)	Yes	Yes
	Value: Responsibility for managing Sea Country *It is recognised that Indigenous people have been sustainably using and managing their sea country, including areas now included within Australian Marine Parks, for thousands of years—in some cases since before rising sea levels created these marine environments.*	Australian Marine Parks (2018)	Possible (unspecified)	Possible (unspecified)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	The Director also acknowledges that Indigenous people have been sustainably using and managing their sea country, including areas now in marine parks, since time immemorial.			
	Value: Management of Sea Country *Aboriginal people of north-western Australia have been sustainably using and managing their sea country for tens of thousands of years, in some cases since before rising sea levels created these marine environments.*		Possible (unspecified)	Possible (unspecified)
	Value: Traditional Fishing and Hunting *Traditional owners have managed and used sea country within the region for tens of thousands of years. They use and actively manage the coastal and marine environments of the region as a resource and to maintain cultural identity, health and wellbeing. Fishing, hunting and the maintenance of culture and heritage through ritual, stories and traditional knowledge continue as important uses of nearshore and adjacent areas.*		Unlikely (unspecified)	Possible (unspecified)
	Value: Sea Country *Aboriginal people of north-western Australia have been sustainably using and managing their sea country for tens of thousands of years, in some cases since before rising sea levels created these marine environments. Sea country refers to the areas of the sea that Aboriginal people are particularly affiliated with through their traditional lore and customs. Sea country is valued for Indigenous cultural identity, health and wellbeing.*		Possible (unspecified)	Possible (unspecified)
	Value: Totemic Species *Aboriginal people continue to assert inherited rights and responsibilities over sea country within the North- west Network. It is recognised that spiritual corridors extend from terrestrial areas into nearshore and offshore waters, a number of marine animals are totems for Indigenous people, and that songlines pass through marine parks.*		Possible (unspecified)	Possible (unspecified)
	Value: Access to Sea Country		Possible (unspecified)	Possible (unspecified)
	Value: Marine resources		Possible (unspecified)	Possible (unspecified)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: Rights to hunt, fish and gather *Three native title determinations have been made over sea country within the Kimberley Marine Park. These determinations recognise in law that native title exists over sea country and preserve continuing rights to access sea country to hunt, fish, gather and use the resources of the waters for personal, domestic, communal, cultural and spiritual needs.*		Possible (unspecified)	Possible (unspecified)
	Value: Ashmore Reef *Traditional Indonesian fishers have also visited and used the northern coast of Australia and its islands and reefs since at least the early eighteenth century. Evidence of this, for example grave sites, is found within the Ashmore Reef Marine Park.*		No	No
Thalanyji	Feature: resources including • fish • shellfish • crabs • crustaceans • sea urchins • turtles	Commonwealth of Australia (2002)	Possible (all values)	Possible (all values)
	• dugong		No	
	• flora and fauna associated with mangrove communities		No	
	Feature: Archaeological sites on Barrow Island		No	No
	Value: Connection to Country		Possible (unspecified)	Possible (unspecified)
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA et al. (2002)	Possible	Possible
	Value: access to Barrow and possibly Montebello Islands	Hook et al. (2004)	No	No (no access restrictions outside of OA)

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Relevant Indigenous Group / Individuals	Features and values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: artefact scatters are located in coastal sand dunes.	Hook (2020)	No	No
	Feature: burials are located in coastal sand dunes.		No	No
	Feature: archaeological sites are located on Barrow Island.	Ditchfield et al. (2018)	No	No
	Feature: archaeological sites are located at Barrow and Montebello Islands.	Dortch et al. (2019).	No	No
	Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.		Unlikely	Possible (submerged)
	Feature: thalu ceremonial sites for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.	DBCA (2022)	Possible (unspecified)	Possible (unspecified)
	Feature: ceremonies.		Possible (unspecified)	Possible (unspecified)
	Value: connection to Country.		Possible (unspecified)	Possible (unspecified)
	Value: transfer of knowledge.		Possible (unspecified)	Possible (unspecified)
	Value: access to Country.		Possible (unspecified)	Possible (unspecified)
	Value: Burial grounds, midden and mythological sites Value: Connection to Country *"There are Aboriginal burial grounds and mythological and numerous midden sites in the site which are considered sacred. Cultural sites have recently been identified through a series of heritage surveys within and adjacent to the World Heritage site (IUCN Consultation, 2020). Ningaloo has significant value for the local Aboriginal people, the Baiyungu, Thalanyji and Yinikurtura people. Prior to European Settlement, the Traditional Owners lived in a coastal – resource driven economy, relying on Ningaloo to service fundamental needs including food, shelter and material resources. The Ningaloo region provides the foundation for cultural heritage dating back at least 32,000 years, including ceremonial thalu sites."*	IUCN (2025)	Possible (unspecified)	Possible (unspecified)

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4.9.5.2 Indigenous archaeological heritage assessment

Indigenous archaeological heritage in relation to the North-west Marine Region (NWMR) is described in Appendix C.

The Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry system was searched which showed 56 Registered Aboriginal Sites and 58 Lodged Aboriginal Sites for the EMBA (Department of Planning Land, Heritage and Aboriginal Enquiry System Results - Appendix I). The exact location, access, and traditional practices for a number of these sites may not be disclosed and if required, such as in the event of a major oil spill, would involve prioritising further consultation with key contacts within DPLH and relevant local Indigenous communities

No sites of significance within the Petroleum Activity or EMBA were identified by Traditional Custodians during consultation in the course of preparing the EP.

4.9.5.3 Submerged cultural heritage values

The Ancient Coastline at 125 m Depth Contour KEF overlaps the Operational Area and EMBA. Woodside considers the Ancient Landscape between the mainland and the Ancient Coastline at 125 m Depth Contour KEF as an area where potential Indigenous archaeological material may exist on the seabed, as this covers the full extent of this possible Indigenous occupation.

Further information regarding Indigenous archaeological heritage in relation to the Ancient Landscape in the NWMR is described in Appendix C.

4.9.5.4 Feedback received via consultation to inform Existing Environment Description

Indigenous cultural values are communally held. This is reflected in Vision 3 of Dhawura Ngilan that “Aboriginal and Torres Strait Islander heritage is managed... according to community ownership” (Heritage Chairs of Australia and New Zealand 2020). Dhawura Ngilan also specifically notes that “Aboriginal and Torres Strait Islander...intangible knowledge systems, which are held in songlines and language, are endangered. This knowledge is held by Elders and the community...” Through consultation with relevant persons, Registered Native Title Bodies Corporate have identified or raised topics relating to environmental values of cultural interest. These include a broad interest in the marine fauna, including whales and turtles (Appendix F).

During previous consultation, BTAC advised it has a cultural obligation to care for the environmental values of Sea Country (Appendix F). In the course of consultation specific to another Woodside EP, BTAC raised the importance of archaeological sites on nearshore islands. Given the EMBA for this activity extends to nearshore areas coastally adjacent to BTAC native title lands, these values may be relevant in the event of an unplanned hydrocarbon spill.

Feedback received on potential cultural features and heritage values during consultation are described in Table 4-20.

Woodside has committed to ongoing engagement to further understand these values. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.2.8).

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Table 4-20: Summary of feedback received via consultation to inform Existing Environment Description

Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
Traditional Custodians and Nominated Representative Corporations				
Buurabalayji Thalanyji Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Connection to Sea Country Enduring deep connection to sea country north of Onslow, extending out to Islands off the Pilbara coast such as the Montebello islands, Barrow Island and the Mackerel Islands	Possible	Possible
Kariyarra Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Turtles	Possible	Possible
		Value: Access to Sea Country (1) Accessing Sea Country for fishing, trapping, crabbing catching turtle, hunting dugong, using stingray barbs for spears and collecting shellfish. (2) Visiting offshore islands at low tide	No (all)	Possible (all)
		Value: Marine species resources Resource species of cultural interest to Kariyarra people include marine mammals, fish, molloscs including bivalves, gastropods and cephalopods.	Possible	Possible
		Value: The existence of intangible cultural heritage including the Yinta (associated with Sea Country). *… Yinta are significant cultural/spiritual sites, often a pool or water source but possibly a hill or other feature. These are, at least generally, associated with creation beings and are a core part of cultural rights to land in determining who can use or speak for an area.*	Possible (unspecified)	Possible (unspecified)
		Interest: Coastal Landforms	No	Unlikely
		Interest: Coastal Native Vegetation	No	Unlikely
		Feature: Cultural interest in cultural heritage sites associated with the coast and the ocean.	Possible	Possible
		Value: Traditional fishing and gathering rights in the ocean	Unlikely (unspecified)	Possible (unspecified)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Value: Cultural interest in intangible cultural heritage associated with the coast and the ocean. (1) Presence of mythic snakes	Possible (unspecified)	Possible (unspecified)
		Value: Intergenerational Knowledge	Possible (unspecified)	Possible (unspecified)
		Value: Cultural obligations to care for Country, including Sea Country. Value: Secret Habitat Totems associated with Sea Country	Possible (unspecified)	Possible (unspecified)
		Interest: Assertion of sea rights in native title claim area *Having duties to look after and protect all KACs Sea Country.*	No (based on NT determined area)	No (based on NT determined area)
		Value: Marine resources Concern raised about the potential for diseases due to adverse event [hydrocarbon spill]	Possible	Possible
		Value: Responsibility to care for Sea Country *Value Marine Resources* *Kariyarra explained the most important thing is the preservation of sea life and coastal areas. The ocean provides critical food sources to their community and Kariyarra Traditional Owners are coastal people so they have a strong connection to the area and a responsibility to preserve the area for future generations.*	Possible (unspecified)	Possible (unspecified)
		Value: Nearshore Islands Islands off Port Hedland - Little Turtle, North turtle and Bedou	No	No
		Value: River systems are important to the food chain.	No	No
		Value: Marine Resources: ▪ shellfish		Possible(all)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		▪ cockles ▪ oysters ▪ clam shells ▪ concha shells (Nanku) ▪ mullets	Possible (all)	
		▪ sea cow (dugong)	No	
Malgana Aboriginal Corporation representing Malgana People (MAC)	Raised during the course of consultation for another EP	Interest: Shark Bay Shark Bay environment is unique and has the largest living organism in the world	No	No
		Feature: Stromatolites and Microbial mats Shark Bay contains stromatolites and microbial mats which are amongst the oldest living in the world.	No	No
		Feature: Seagrass	No	Possible
Murujuga Aboriginal Corporation	Raised during the course of consultation for this EP	Value: Marine Ecosystems and Species	Possible (unspecified)	Possible (unspecified)
		Value: Submerged Landscapes	Possible	Possible
	Raised during the course of consultation for another EP	Value: Mermaid Sound (1) The ecosystem health of Mermaid Sound	No	No
		Value: Whales (1) Whales and other species of totemic importance need to be protected, including their populations, biodiversity, and migration patterns. (2) A whale Thalu is an increase at the totemic site that brings whales into the beach.	Possible (all)	Possible (all)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Value: Dolphins There are cultural ceremonies associated with communicating with dolphins	Possible	Possible
		Value: Dugongs Dugongs are a food source associated with seagrasses near Gidley Island	No	Possible
		Value: Fish Specific mentions of fish included. There are Thalu ceremonies associated with increasing fish stocks	Possible	Possible
		Value: Sea Snakes Sea snakes were specifically mentioned as culturally important species	Possible	Possible
		Value: Turtles (1) Flatback, green, hawksbill, loggerhead and leatherback turtles; Songline The Songline associated with the turtle comes from Fortescue to Withnell Bay. This song is sung by four or five tribes for day and night without consuming food or water. (2) Flatback, green, hawksbill, loggerhead and leatherback turtles: They are culturally important species that moves through Mermaid Sound. Turtles are most often seen in shallower areas and where there are seagrasses. (3) Most beaches are nesting sites for turtles, including those on Gidley and Legendre Islands... which also identifies Rosemary Island as the most important hawksbill turtle nesting site in Western Australia.	Possible (turtles) No (coastal locations)	Possible (turtles) No (coastal locations)
		Feature: Coral Concerned about coral bleaching because corals are important. Beautiful colours. They also attract a lot of other things. Fish carry coral spawn like bees pollinate flowers. If fish were looked after, the corals would get brighter and brighter (by transmitting nutrients and performing other ecosystem services, fish can	No	Possible

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		be symbiotic with corals). Locations identified during consultation include Withnell Bay; Conzinc Bay; south west of Legendre Island.		
		Feature: Seagrass (1) Seagrasses provide protection for animals. (2) Locations identified during consultation include Conzinc Island; between Angel and Gidley Islands.	No	Possible
		Feature: Mangroves (1) Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Locations identified during consultation include Conzinc Bay north end; Flying Foam Passage; Searipple Passage; north-east bay of West Lewis Island.	No	Possible
		Feature: Macroalgal communities Are important primary production sites, habitats, and food sources (not explicitly identified by elders).	No	Possible
		Feature: Subtidal soft-bottom communities	Possible	Possible
		Feature: Intertidal sand and mudflat communities	No	Possible
		Feature: Rocky shores	No	Possible (shoreline accumulation only)
		Feature: Other areas of Mermaid Sound of importance (including Conzinc Bay) *(1) Fish traps: There are known fish traps in Conzinc Bay, and others would have or do exist in coastal areas of islands, such as Angel and Gidley Islands. People still use the Conzinc Bay fish traps regularly for catching mangrove jack, trevally and other fish.*	No	No (based on specific location)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Value: Squid *(1) Squidding (harvesting of squid from the ocean) around Conzinc Bay*	No (based on specific location)	No (based on specific location)
		Value: Appropriate cultural authority for Murujuga.	No (area not within OA)	Possible
		Interest: Management of onshore heritage sites	No	Possible (shoreline accumulation only)
		Interest: Submerged Heritage	Possible	Possible
		Value: Songlines The potential impact on Jinna (Songlines) due to the lack of broader-scale bathymetric information for the submerged landscape	Possible (unspecified)	Possible (unspecified)
		Value/s: Stingrays	Possible	Possible
		Value/s: Sharks	Possible	Possible
		Value/s: Crustaceans	Possible	Possible
		Value/s: Octopus	Possible	Possible
		Value/s: Sea stars	Possible	Possible
		Value/s: Sea urchins	Possible	Possible
		Value/s: Sponges	Possible	Possible
		Value/s: Molluscs	Possible	Possible
		Value/s: Submerged Landscape Potential impact to Aboriginal heritage, due to the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	Yes	Yes

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Value/s: Murujuga seasonal calendar Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	Possible (unspecified)	Possible (unspecified)
Nanda Aboriginal Corporation	Raised during the course of consultation for this EP	Value/s: Heritage Sites (known and unknown) including artefact scatters, burials as well as ethnographic sites related to the Nanda dreaming story (most notably Bula Guda and Nungingay Spring).	No	No
		Value: Coastlines	No	No (based on Nanda NTD)
		Value: Presence of submerged cultural landscapes	Possible	Possible
	Raised during the course of consultation for another EP	Value: Whales (1) Migration patterns	Possible	Possible
		Value: Significant cultural sites, including Barrow Island and Abrolhos Islands, noting the presence of artefacts and their historical significance.	No	No
		Value: Knowledge Sharing Nanda expressed concerns about retaining cultural knowledge and the implications of sharing cultural values.	Possible (unspecified)	Possible (unspecified)
		Value: White snow crabs, Shark Bay	No (location specific)	No (location specific)
		Value: North Island Artefacts	No	No
		Value: Food sources	Possible (unspecified)	Possible (unspecified)
		Feature: Shorelines Cultural significance of shorelines for Nanda people.	No	No (based on Nanda NTD)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Value: Whales (1) Migration patterns. Queried what Woodside does with respect to whales that move up and down the coast.	Possible	Possible
Nganhurra Thanardi Garrbu Aboriginal Corporation representing Baiyungu and Thalanyji people	Raised during the course of consultation for another EP	Value: Whales and Whale Sharks	Possible (both)	Possible (both)
		Feature: Marine parks	No	Possible
Ngarluma Aboriginal Corporation	Raised during the course of consultation for another EP	Interest: Management of onshore heritage sites	No	No
		Interest: Submerged Heritage	Possible	Possible
Nhuwala Claim Group (represented by YMAC)	Raised during the course of consultation for this EP	No values raised	-	-
Nhuwala / Thalanyji People (Represented by BTAC)	Raised during the course of consultation for this EP	No values raised	-	-
Nyangumarta Warrarn Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Eighty Mile Beach Priority is to protect Eighty Mile Beach due to its cultural and ecological value to the Nyangumarta Custodians.	No	No
		Value: Migrating Birds	Possible	Possible
		Value: Whales	Possible	Possible
		Value: Turtles	Possible	Possible
		Value: Vegetation	No	No

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
Robe River Kuruma Aboriginal Corporation	Raised during the course of consultation for another EP	Feature: Coastline *(1) Oil spill or other environmental incident - threat to the coast*	No	Possible
		Feature: Underwater heritage	Unlikely	Possible
Wanparta Aboriginal Corporation	Raised during the course of consultation for this EP	Value/s: Coastline *The coastline is extremely important to Ngarla, both from a spiritual perspective and as a way of living*	No	Possible
		Value/s: Caring for Sea Country *(1) The best way to protect Ngarla country and work with Wanparta is to engage the Ngarla rangers* *(2) Ngarla are responsible for caring for now and into the future* *(3) By caring for Ngarla country, the spirits look after the Ngarla People.*	Possible (unspecified)	Possible (unspecified)
	Raised during the course of consultation for another EP	Value: Connection to Sea Country *The Ngarla People have a deep spiritual connection to Sea Country*	Possible (unspecified)	Possible (unspecified)
		Feature: Nearshore Islands (particularly Solitary Island/ Jarrkunpungu) Value: Intangible Cultural Heritage (Dreaming Stories) *(1) Wanparta stated that they are linked to the dreaming stories through the interconnecting islands* *(2) Wanparta legal representative highlighted that there are Dreamtime stories through the nearshore island (Solitary Island/ Jarrkunpungu)*	No (nearshore islands) Possible (unspecified)	No (nearshore islands) Possible (unspecified)
		Value: Cultural Obligation to look after Sea Country Values *Extremely important to Ngarla people, and they feel a responsibility to look after the ocean and lore.*	Possible (unspecified)	Possible (unspecified)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Feature: Sea (Fresh and Salt Water) Value: Intangible Cultural Heritage (Dreaming Stories) *We are a sea people connected through both fresh and salt water with Dreamtime stories that connect through the sea.*	Possible Possible (unspecified)	Possible Possible (unspecified)
		Feature: Sea (Ocean/Water) *(1) Wanparta noted that they feel a sense of responsibility to keep looking after the ocean. They noted that they are very connected to the health of the ocean, they have a sense of responsibility to look after the ocean (Law and culture). If impacted, this would impact future generations and how Law is practiced* *(2) … explained the emblems and totems reflected on the Wanparta Aboriginal Corporation logo. She noted that the dark blue on the logo represents the ocean (and that their Native Title) extends into the ocean).* *(3) The importance of water was emphasised by the group* *(4) Protection and management of marine life and healthy ocean plays a significant role in lore, culture and customs*	Possible (all)	Possible (all)
		Value: Marine Species The emblems and totems reflected on the Wanparta Aboriginal Corporation logo. The animals depicted on the logo are totemic species and include the (1) Kestrel, (2) Octopus, (3) Spiny Brim and (4) Sting Ray.	(1) No Possible (all)	(1) No Possible (all)
		Value: Sea life health *Wanparta noted that water and sea life is important to the Ngarla people. It was said that a healthy marine life = an important food source = healthy people*	Possible (unspecified)	Possible (unspecified)
		Value: Fish *Concerned with maintaining fish stock post operations.*	Possible	Possible

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		Value: Ethnohistorical evidence on islands	Unlikely (unspecified)	Unlikely (unspecified)
Wirrawandi Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Whales (General interest around management of impacts to whales)	Possible	Possible
		Value: Turtles (General interest around monitoring and management)	Possible	Possible
		Feature: Onshore heritage - Rock art (Query related to emissions)	No	No
		Interest: Submerged heritage	Possible	Possible
Yindjibarndi Aboriginal Corporation	Raised during the course of consultation for another EP	No values raised	-	-
Yinggarda Aboriginal Corporation	Raised during the course of consultation for another EP	Value: Turtles	Possible	Possible
		Value: Whales	Possible	Possible
		Value: Coastal Fishing Local communities enjoy fishing along the coast, including for (1) Shark Bay Mullet that is an important resource.	No	Unlikely
		Value: Ecosystem Health Plants, animals and the environment are inexorably linked to their culture	Possible	Possible
		Value: Dugongs	No	Possible
		Feature: Seagrass Important food source for dugongs (Shark Bay)	No	Possible
		Value: Whales 1) potential impact to migration patterns of whales; (2) and potential collisions with vessels	Possible	Possible
Native Title Representative Bodies				

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
Yamatji Marlpa Aboriginal Corporation	Consultation for this EP	No values raised	-	-
Self-identified Indigenous Groups				
Ngarluma Yindjibarndi Foundation Ltd	Consultation for this EP	No values raised	-	-
Other Indigenous Groups				
Save Our Songlines	Consultation for this EP	No values raised	-	-
	Raised in context of another Activity[5]	Feature: Songlines, dreaming and energy lines (unspecified)	Possible (unspecified)	Possible (unspecified)
		Feature: Whales – including migratory patterns	Possible	Possible
		Interest: Turtles – including migration patterns	Possible	Possible
		Interest: Dugongs - unspecified	No	Possible
		Interest: Plankton - unspecified	Possible	Possible
		Interest: Seagrass - unspecified	No	Possible
		Interest: where saltwater and freshwater meet	No	Possible
		Value: Caring for Country	Possible (unspecified)	Possible (unspecified)
		Feature: Whales “Whales carry important songlines, the whale Dreaming, and connection between land and sea” "As the biggest animal on earth, the whale has the greatest heart connection to songlines, people and animals and carries the songlines around the ocean, connecting places."	Possible (whales)	Possible (whales)

[5] *Raised in context of Scarborough Project activities*

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		“Whale Dreaming story has a strong connection to the heart centre in each person, this story helps people to open up and to realise, understand and raise awareness of the environment and everything humans are connected to.” "In their own families, female whales have a caretaker or midwife role, and those who are connected to the Whale Dreaming and carry the women's lore also have obligations as caretakers of the earth." "Because each animal uses songlines for migration, breeding and feeding, the disruption or distortion to the songlines causes the animals to become disoriented, confused or lost.”	Possible (songlines, unspecified)	Possible (songlines, unspecified)
		Interest: Whales Interest: Pygmy Blue whales “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales iii. whales' sonar communications systems, particularly between mothers and calves, from sound and vibrations emitted by the Activity v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and vi. vehicle collision and/or entanglement with marine fauna"	Possible (whales)	Possible (whales)
		Interest: Turtles "Other animals, such as turtles, dolphins, dugongs, and krill follow the whale's songlines, because they're all connected together - the whale creates a path for the other animals like 'grading a road'." “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and	Possible (turtles)	Possible (turtles)

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		vi. vehicle collision and/or entanglement with marine fauna"		
		Interest: Dugongs "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)"	No(dugong)	Possible (dugong)
		Interest: Pelagic fish "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales"	Possible (fish)	Possible (fish)
		Interest: Sharks "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)"	Possible (sharks)	Possible (sharks)
		Interest: Plankton "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: i. chronic mortality to some marine organisms, including zooplankton	Possible	Possible
		Interest: Water quality "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: iv. potential operational discharges associated with the presence of ships in the area, including potential impacts to water quality	Yes	Yes

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Relevant Indigenous Group / Individuals	Context	Description of value / feature / interest	Potential for overlap	
			Operational Area	EMBA
		v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)		
		Interest: Seabirds “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)	Possible	Possible
		Interest: Where saltwater and freshwater meet "The places where the saltwater from the sea and the freshwater from the land connect are where the biggest energy lines[6] are, and that connection is a core of creation relevant to a Dreaming story."	No	Possible
		Value: Rock Art "Rocks at Murujuga symbolise stories, the totems (the depicted artwork) - whether representing plants or animals - and tell a story of their history, and how long they've been there."	No	Possible (submerged)
		Value: Bungarra, Eagle, Kangaroo Identified totemic species	No	No
		Feature: Murujuga Interest: Climate Change Potential damage to Murujuga rock art due to “acid gas emissions from operations on the Burrup” and climate change.	No	Possible

[6] *Although Save our Songlines referred to and described Energy Lines, these are understood to be the same as songlines and this document therefore refers to songlines*

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4.9.6 Summary of cultural features and heritage values

Woodside has developed a robust understanding of cultural features and heritage values relevant to the activity through examination of publicly available information, studies and consultation with relevant persons under regulation 25 of the Environment Regulations.

The cultural features and heritage values identified in Sections 4.9.1 to 4.9.7 confirms whether there is any potential for these to exist within the Operational Area or EMBA. As previously described, topics which have been raised in the context of an interest linked to the natural environment are impact and risk assessed in Sections 6.7, 6.8, 6.9 and 6.11.

A summary of cultural features and heritage values identified through both consultation and desktop assessment is provided in Table 4-21.

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Table 4-21 Summary of cultural features and heritage values

Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Archaeological heritage and landscapes					
Coastal/ island archaeological sites	Coastal archaeological sites include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.	✓	✓	No	Possible
Petroglyphs	Petroglyphs are a form of rock art. Petroglyphs are a prominent feature particularly at Murujuga where it is found on hard, volcanic rock.	✓	✓	No	Possible (submerged)
Fish traps	Stone arrangements constructed in intertidal areas which fill with fish at high tide and trap them at low tide.	✓	✓	No	Possible (submerged)
Submerged archaeological sites	The Ancient Landscape extends between 125m and 130m below current sea level. Ancient occupation of this area may have left traces through now submerged archaeological sites.	✓	✓	Possible	Possible
Rivers, waterholes, tidal channels and seeps	Water sources on the Ancient Landscape which may be culturally significant or archeologically prospective.	x	✓	Possible	Possible
Submerged hills	Hills on the Ancient Landscape which may be culturally significant or archeologically prospective. As sea level rose these hills would have become islands and eventually submerged.	x	x	Possible	Possible
Intangible values					
Songlines	Publicly available literature talks to Songlines associated with ancestral beings that travelled Sea Country.	✓	✓	Possible (unspecified)	Possible (unspecified)
Creation/ Dreaming sites, sacred sites and ancestral beings	Publicly available literature talks to creation/dreaming and ancestral beings, including water serpents, connected to or originating from the sea generally.	✓	✓	Possible (unspecified)	Possible (unspecified)
Ceremonial sites	Places where ceremony (e.g. thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	✓	✓	Possible (unspecified)	Possible (unspecified)

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Cultural obligations to care for Country	Cultural obligation to care for the environmental values of Sea Country. Exclusion of Traditional Custodians from Sea Country or decision making processes may inhibit ability to care for Country.	✓	✓	Possible (unspecified)	Possible (unspecified)
Knowledge of Country/ customary law and transfer of knowledge	The preservation and transmission of knowledge is dependent on the preservation of the environment generally. Exclusion of Traditional Custodians from Sea Country may inhibit the transfer of knowledge.	✓	✓	Possible (unspecified)	Possible (unspecified)
Connection to Country	Connection to Country is described in publicly available literature as “important to the Traditional owners’ spirituality and religion”. Connection to Country may be damaged where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge	✓	✓	Possible (unspecified)	Possible (unspecified)
Access to Country	Limitations on Traditional Custodians accessing or enjoying areas of Sea Country	✓	✓	Possible (unspecified)	Possible (unspecified)
Kinship systems and totemic species	Traditional Custodians have connection to species through kinship and totemic systems. An individual may have obligation to care for or not consume a species to which they are kin.	✓	✓	Possible (unspecified)	Possible (unspecified)
Resource collection	Fishing, hunting, gathering of marine species including marine mammals, marine reptiles, fish and invertebrates.	✓	✓	Possible (unspecified)	Possible (unspecified)
Marine ecosystems and species					
Water quality	Interest only, raised as a natural environment interest	✓	x	Yes	Yes
Marine species Marine mammals: Whales	Generally raised in consultation and literature as an interest Generally raised in consultation and identified in publicly available literature Thalu species of totemic importance Linked to Songlines and Dreaming stories Humpback whales in particular	✓	✓	Possible	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Marine mammals: Dolphins	Cultural ceremonies associated with dolphins Culturally important species	✓	✓	Possible	Possible
Marine mammals: Dugongs	Culturally important species Used as a resource	✓	✓	No	Possible
Marine reptiles: Marine turtles	Culturally important species and migration There are Thalu ceremonies associated with turtles Turtles and turtle eggs as a resource	✓	✓	Possible	Possible
Fish: Fish, whale sharks, sharks and rays	Culturally important species Used as a resource Law run through the sea, including fish There are Thalu ceremonies associated with increasing fish stocks Fish, including bream and sting rays are totemic species Fish, including sharks and rays raised as a natural environment interest	✓	✓	Possible	Possible
Cephalopods: Squid and Octopus	Thalu species of totemic importance Resource	✓	✓	Possible	Possible
Intertidal communities: Bivalves, gastropods, echinoderms (sea urchins), crustaceans	Resource.	✓	✓	No	Possible
Seabirds	Culturally important species Birds (including shags, seagulls and osprey) and bird eggs as a resource	✓	✓	Possible	Possible
Shoreline habitats: Mangroves	Critical breeding ground for marine and terrestrial wildlife. Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries. Mangrove seeds as resource	✓	✓	No	Possible

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Identified cultural features and heritage values	Context	EP source		Potential for overlap	
		Consultation feedback	Desktop literature assessment	Operational Area	EMBA
Shoreline habitats: Intertidal sand/ mudflat communities	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Shorelines	Interest only, raised as a natural environment interest.	✓	✓	No	Possible
Marine Park/ coastal reserves	Interest and responsibility	✓	✓	No	Possible

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4.9.7 Historic sites of significance

Historic sites of significance and heritage value are found along foreshores of the NWMR. Heritage places are protected in Western Australia under the *Heritage Act 2018*.

There are no known sites of Historic cultural heritage significance within the Operational Area.

4.9.8 Historic underwater heritage

The protection of historic underwater heritage under Commonwealth and State legislation is described in Appendix B.

The Australasian Underwater Cultural Heritage database records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other underwater cultural heritage) in Australian waters. The Australian National Shipwreck Database lists all known shipwrecks in Australian waters.

A search of these databases indicated that there are no sites within the Operational Area, however, a number of sites (shipwrecks) exist within the EMBA. Recorded historical shipwrecks within approximately 50 km of the Operational Area are listed in Table 4-22 and displayed in Figure 4-16. Appendix C lists the recorded historical shipwrecks present within the EMBA.

Table 4-22: Historic shipwrecks within approximately 50 km of the Operational Area

Shipwreck	ID number	Year wrecked	Distance and direction from Operational Area to shipwreck
Curlew	3925	1911	33 km west
Marietta	4457	1905	33 km west
Tanami	4898	1935	33 km south
Trial (also Tryall or Tryal)	4938	1622	33 km south
Vianen	5062	1628	33 km west
Wild Wave (China)	5113	1873	33 km west
McCormack	8223	1989	40 km south
McDermott Derrick Barge No 20	4502	1989	40 km south
Plym HMS	4667	1952	44 km south
Tropic Queen	8284	1975	46 km south
Parks Lugger	-	4614	51 km south

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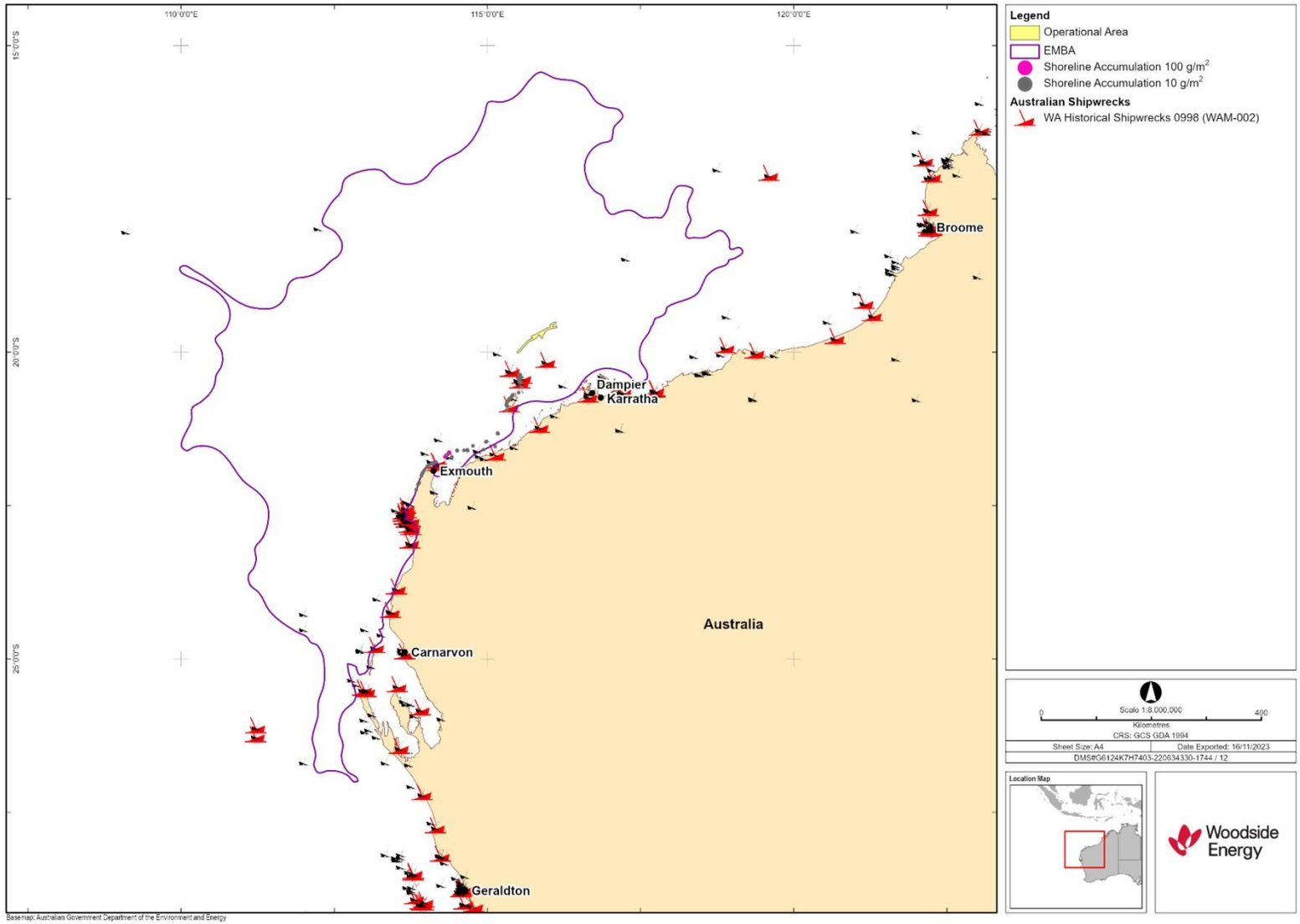


Figure 4-16: Historic shipwrecks overlapping and adjacent to the EMBA

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4.9.9 World, National and Commonwealth heritage listed places

No listed heritage places overlap the Operational Area. World, National and Commonwealth heritage places within the EMBA are identified in Table 4-23 and displayed in Figure 4-17. Appendix C outlines the values, and sensitivities of these places, including the Outstanding Universal Values (OUV) of the World Heritage Places listed below.

Table 4-23: World, National and Commonwealth heritage listed places within the EMBA

Listed place	Distance and direction from Operational Area to listed place
World Heritage Places / WHPs	
Murujuga Cultural Landscape	104 km south
Ningaloo Coast	208 km southeast
Shark Bay, Western Australia	570 km south
NHPs	
Dampier Archipelago (including Burrup Peninsula)	104 km southeast
Ningaloo Coast	208 km south
Shark Bay, Western Australia	570 km south
Commonwealth Heritage Places (CHP)	
Ningaloo Marine Area - Commonwealth Waters	226 km south
Learmonth Air Weapons Range Facility	314 south

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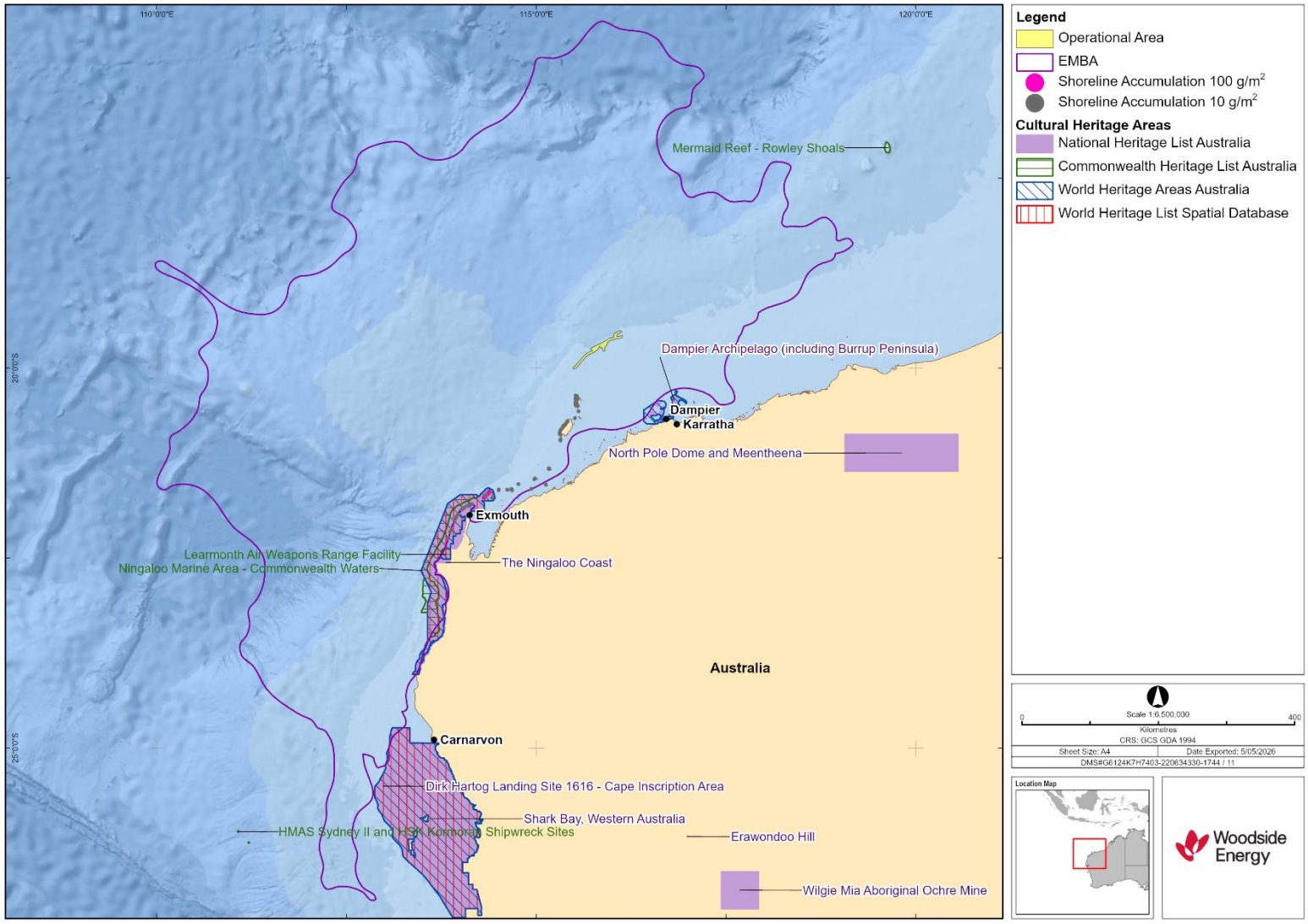


Figure 4-17: World, National and Commonwealth heritage listed places overlapping and adjacent to the EMBA

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4.10 Socio-economic environment

4.10.1 Commercial fisheries

A number of Commonwealth and State fishery management areas are located within the Operational Area and EMBA. Data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) were used to identify if Commonwealth managed fisheries have fished within the Operational Area and EMBA in the most recently available five-year period of catch and effort data (2020-2024). FishCube data was also requested from the WA Department of Primary Industries and Regional Development (DPIRD) for the most recently available five-year period of fishery catch and effort data (2020-2025). This data was used to analyse the potential for interaction of fisheries with the Operational Area and EMBA. Data was reviewed from the last five years as a subset of past fishing effort. This was deemed an appropriate period to represent potential future fishing effort over the lifecycle of this EP.

This information was used to determine relevant fisheries for consultation who may be affected by the Petroleum Activity. Table 4-24 provides an assessment of the potential interaction and Appendix C provides further detail on the fisheries that have been identified through desk-based assessment and consultation (Section 5).

No Commonwealth managed fisheries were identified as having potential for interaction with the Petroleum Activity within the Operational Area; and three were identified within the EMBA. Seven State managed fisheries were identified as having potential for interaction with the Petroleum Activity within the Operational Area and 20 were identified within the EMBA (Figure 4-18).

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Table 4-24: Commonwealth and State commercial fishery management areas overlapping the Operational Area and EMBA

Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
Commonwealth managed fisheries			
North West Slope Trawl Fishery (NWSTF)	X	✓	The North West Slope Trawl Fishery management area overlaps the EMBA. The fishery operates off north-western Australia from 114°E to 125°E roughly between the 200 m isobath and the outer boundary of the Australian Fishing Zone (Butler et al. 2025). The fishery commenced in 1985, and the number of active vessels peaked at 21 in the 1986–87 season, decreasing to between 1 and 6 vessels per year since 2005-06 (Butler et al.,2025). Three vessels operated in each of the 2022–23 and 2023–24 seasons (Butler et al. 2025). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Southern Bluefin Tuna Fishery (SBTF)	✓	✓	This Southern Bluefin Tuna Fishery management area overlaps the Operational Area and EMBA. Fishing mainly occurs in the Great Australian Bight during summer months, and off the New South Wales coastline during winter months (Butler et al. 2025). Five purse seine vessels and 27 longline vessels were recorded in the 2023-24 period, a decrease from six purse seine vessels and an increase from the 24 longline vessels in the 2022–23 period (Butler et al. 2025). No fisheries catch effort data has been recorded within the Operational Area or the EMBA for the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the Operational Area or EMBA.
Western Deepwater Trawl Fishery (WDTF)	X	✓	The Western Deepwater Trawl Fishery management area overlaps the EMBA. The fishery operates off the Western Australian coast, in the Gascoyne Region ranging between the North West Cape and Shark Bay. The fishery uses demersal trawling methods, in waters seaward of a line approximating the 200 m isobath (Butler et al. 2025). Since 2004–05, one to three vessels have been active in the fishery, with one active vessel in recorded in the 2023–24 season (Butler et al. 2025) Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Skipjack Fishery (WSF)	✓	✓	The Western Skipjack Fishery management area overlaps the Operational Area and EMBA. The fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The fishery is currently not active, and no fishing has occurred since 2009 (Butler et al. 2025).

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
			No fisheries catch effort data has been recorded within the Operational Area or the EMBA for the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the Operational Area or the EMBA.
Western Tuna and Billfish Fishery (WTBF)	✓	✓	The Western Tuna and Billfish Fishery management area overlaps the Operational Area and EMBA. The majority of Australian catch has concentrated off south-west Western Australia with occasional activity off South Australia (Butler et al. 2025). Four pelagic longline and 3 minor line vessels were active during the 2023-24 season (Butler et al. 2025). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
State managed fisheries			
Abalone Managed Fishery	✓	✓	The Abalone Managed Fishery management area overlaps the Operational Area and EMBA. The fishery includes all coastal waters from the WA and SA border to the WA and NT border (DoF 2011). The abalone fishery is typically only active to depths of up to 40 m (Newman et al. 2024). No fisheries catch effort data has been recorded within the Operational Area or the EMBA for the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the Operational Area or the EMBA.
Exmouth Gulf Beach Seine and Mesh Net Managed Fishery	X	✓	The Exmouth Gulf Beach Seine and Mesh Net Managed Fishery management area does not intersect with the Operational Area but overlaps the EMBA. Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Exmouth Gulf Prawn Managed Fishery	X	✓	The Exmouth Gulf Prawn Managed Fishery management area overlaps the EMBA. The fishery operates in the Exmouth Gulf, targeting species generally more than 50 m water depth. The fishery is limited to the spatial extent within the Exmouth Gulf and Muiron Islands (WAFIC 2026). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
Gascoyne Demersal Scalefish Managed Fishery	X	✓	The Gascoyne Demersal Scalefish Managed Fishery management area overlaps the EMBA. The fishery is located between the southern Ningaloo Coast to the south of Shark Bay with a closure area at Point Maud to Tantabiddi (WAFIC 2026). Eight vessels were active during 2023, seven of which fished for more than 10 days during peak pink snapper season (Newman et al. 2024). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Mackerel Managed Fishery	✓	✓	The Mackerel Managed Fishery management area overlaps the Operational Area (Area 2) and EMBA (Areas 2 and 3). The commercial fishery extends from the West Coast Bioregion to the WA/NT border. There are three managed fishing areas: Area 1: Kimberley (121º E to the WA/NT border); Area 2: Pilbara (114º E to 121º E) and Area 3: Gascoyne (27º S to 114º E) and West Coast (Cape Leeuwin to 27º S) (Newman et al. 2024). There were 15 active vessels in the 2023 season, primarily from May to November (Newman et al. 2024). The mackerel fishery primarily uses near-surface trolling gear and also jig fishing from vessels in coastal areas around reefs, shoals and headlands to target Spanish mackerel. Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Marine Aquarium Fish Managed Fishery	✓	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the Operational Area and EMBA. The fishery can operate throughout WA State waters. The fishery is typically more active in waters south of Broome and higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier, and Broome (Newman et al. 2024). There were 12 licences were active in 2023 across the Marine Aquarium Fish Managed Fishery and the Hermit Crab Fishery (Newman et al. 2024). Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Nickol Bay Prawn Managed Fishery	X	✓	The Nickol Bay Prawn Managed Fishery management area overlaps the EMBA. The fishery operates in nearshore and offshore waters of the Pilbara region along the NWS. Trawling has been reported to occur at several locations along the Pilbara coast to the east of the Burrup Peninsula, including within the waters of Nickol Bay. There were 5 vessels active in the 2023 season (Newman et al. 2024).

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
			No fisheries catch effort data has been recorded within the 10 nm CAES block for the EMBA for the five-year period 2020-2025. However, the fishery has been active within the 60 nm CAES block. Woodside therefore considers there could be potential for interaction with this fishery within the EMBA.
Octopus Managed Fishery	X	✓	The Octopus Interim Managed Fishery management area overlaps the EMBA. The fishery operates from Kalbarri Cliffs in the north to Esperance in the south. There were 28 active vessels in the 2023 season (Newman et al. 2024). No fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the EMBA.
Onslow Prawn Managed Fishery	✓	✓	The Onslow Prawn Managed Fishery management area overlaps the Operational Area and EMBA. The fishery encompasses a portion of the continental shelf off the Pilbara. Fishing primarily occurs in water depths of 15 m or less for this fishery. There was one active vessel recorded in the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the Operational Area and EMBA within the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions	X	✓	The Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions is not a specific fishery; it's an area in which there is no limit on the number of operators or vessels (c.f. Limited entry fishery). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Pearl Oyster Managed Fishery (Zone 1 and 2)	✓	✓	The Pearl Oyster Managed Fishery management area overlaps the Operational Area and the EMBA. Fishing effort is mostly focused within coastal waters (10-15 m depth) with a maximum depth of 35 m, collecting wild oysters for use in the aquaculture production of pearls (Newman et al. 2024). These are collected from fishing grounds primarily off the coast of Eighty Mile Beach, smaller catches from the Lacepede Islands (Newman et al. 2024). No fisheries catch effort data has been recorded within the Operational Area or the EMBA within the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the Operational Area or the EMBA.
Pilbara Crab Managed Fishery	✓	✓	The Pilbara Crab Managed Fishery management area overlaps the Operational Area and EMBA. The Operational Area is overlapped by Area A of this fishery. Fishing is permitted within Area A (limited to 300 traps). There is no information currently publicly available on vessel data for this fishery (Newman et al. 2024).

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
			Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Pilbara Fish Trawl (Interim) Managed Fishery *Part of the Pilbara Demersal Scalefish Fishery (includes trawl, trap and line fisheries)*	✓	✓	The Pilbara Fish Trawl (Interim) Managed Fishery management area overlaps the Operational Area and EMBA. The fishery is a high intensity fishery divided into two zones and an area that is prohibited to trawling. In addition to the Prohibited Trawl Fishing area, no fish trawl units are allocated for use in Zone 1 or Areas 3 and 6 of Zone 2 (which comprises six management areas) (Newman et al. 2024). There were 4 active vessels reported in the trawl sector for the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Pilbara Line Fishery (Condition) *Part of the Pilbara Demersal Scalefish Fishery (includes trawl, trap and line fisheries)*	✓	✓	The Pilbara Line Managed Fishery management area overlaps the Operational Area and EMBA. Fishing effort is typically reported in waters less that are less than 50 m, however, through consultation fishers have reported setting traps in waters greater than 50 m deep. There were six active vessels reported in the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Pilbara Trap Managed Fishery *Part of the Pilbara Demersal Scalefish Fishery (includes trawl, trap and line fisheries)*	✓	✓	The Pilbara Trap Managed Fishery management area overlaps the Operational Area and EMBA. The fishery covers the area from Exmouth northwards and eastwards to the 120° line of longitude, and offshore as far as the 200 m isobath. The fishery includes six licences allocated to three vessels, operating principally from Onslow (Newman et al. 2024). Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Shark Bay Crab Managed Fishery	X	✓	The Shark Bay Crab Managed Fishery management area overlaps the EMBA. The fishery is based primarily in Carnarvon but operates throughout the waters of Shark Bay. In 2023 there were three trap vessels and 21 trawl vessels active within the fishery (Newman et al. 2023).

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
			Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Shark Bay Prawn Managed Fishery	X	✓	The Shark Bay Prawn Managed Fishery's management area overlaps the EMBA. There were 12 licensed vessels in the 2023 season, a decrease from the 2022 season which has 18 licensed vessels (Newman et al. 2024). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Shark Bay Scallop Managed Fishery	X	✓	The Shark Bay Scallop Managed Fishery's management area overlaps the EMBA. Within the fishery there are boats that are licensed to take scallops (11 Class A licences) and boats that also fish for prawns (18 Class B licenses). There were nine active vessels recorded during the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
South-West Coast Salmon Fishery	✓	✓	The South-west Coast Salmon Managed Fishery management area overlaps the Operational Area and EMBA. The fishery operates on various beaches south of the metropolitan area and includes all WA waters north of Cape Beaufort except Geographe Bay. The number of active vessels or licences in 2023 is unknown, however there were approximately 12 commercial fishers employed in 2018 (Newman et al. 2024). No fisheries catch effort data has been recorded within the Operational Area or the EMBA within the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the Operational Area or the EMBA.
Specimen Shell Managed Fishery	✓	✓	The Specimen Shell Managed Fishery overlaps the Operational Area and the EMBA. The fishery encompasses the entire WA coastline, but effort is concentrated in areas adjacent to the population centres such as Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah, the Capes area and Albany (Newman et al. 2024). There are several closed areas where the fishery is not permitted to operate. However, shells are typically collected in waters less than 30 m deep. There was a total of 30 licenses active within this fishery, of which 18 licenses were fished in 2023 (Newman et al. 2024). Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
Western Australia North Coast Shark Fishery	✓	✓	The Western Australia North Coast Shark Fishery management area overlaps the Operational Area and EMBA. The fishery has been inactive since the 2008-09 season. No fisheries catch effort data has been recorded within the Operational Area or EMBA for the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the Operational Area or the EMBA.
West Australian Sea Cucumber Fishery	X	✓	The Western Australian Sea Cucumber Fishery management area overlaps the EMBA. Fishing occurs mostly in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemption (Newman et al. 2024). Three vessels operated in the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
West Coast Deep Sea Crustacean Managed Fishery	✓	✓	The West Coast Deep Sea Crustacean Managed Fishery management area overlaps the Operational Area and EMBA. The fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ. There were 7 license holders with three vessels active in the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
West Coast Demersal Gillnet & Demersal Longline	X	✓	The West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery management area overlaps the EMBA. The fishery is part of the Temperate Demersal Gillnet and Demersal Longline Fishery, which operates between 26° and 33° S, and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery, which operates from 33° S to the WA/SA border (Newman et al. 2024). The vessel and license data for this fishery is not publicly available. There were approximately 5 to 6 skippers and crew employed during 2022–23 period. No fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers there to be no potential for interaction with this fishery and the EMBA.
West Coast Demersal Scalefish (Interim) Managed Fishery	X	✓	The West Coast Demersal Scalefish Interim Managed Fishery management area overlaps the EMBA. The fishery is the main commercial fishery that targets demersal species in the West Coast Bioregion. It encompasses the waters from just south of Shark Bay down to just east of Augusta and extends seaward to the 200 NM boundary. The fishery is divided into four inshore management areas and one offshore management area (Newman et al. 2024). There were 28 licensed vessels operating in the 2023 season (Newman et al. 2024).

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Fishery	Potential for interaction during activity (x = no spatial overlap; ✓= spatial overlap; blue shading = possibility of interaction)		Description
	Operational Area	EMBA	
			Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
West Coast Rock Lobster Managed Fishery	X	✓	The West Coast Rock Lobster Fishery management area overlaps the EMBA. The fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North-west Cape and Augusta (Newman et al. 2024). There were 218 vessels active during the 2023 season (Newman et al. 2024). Fisheries catch effort data has been recorded within the EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Charter-based Commercial Operators			
Tour Operator	✓	✓	Fishing Tour Operators are permitted to operate across WA State waters and are required to report monthly logbook records of client fish catches. Tour operator (charter) catches are almost exclusively boat-based using hook and line (Newman et al. 2023). Fisheries catch effort data has been recorded within the Operational Area and EMBA for the five-year period 2020-2025. Therefore, Woodside considers it a possibility that interactions with fishing tour operators may occur in the Operational Area and EMBA.

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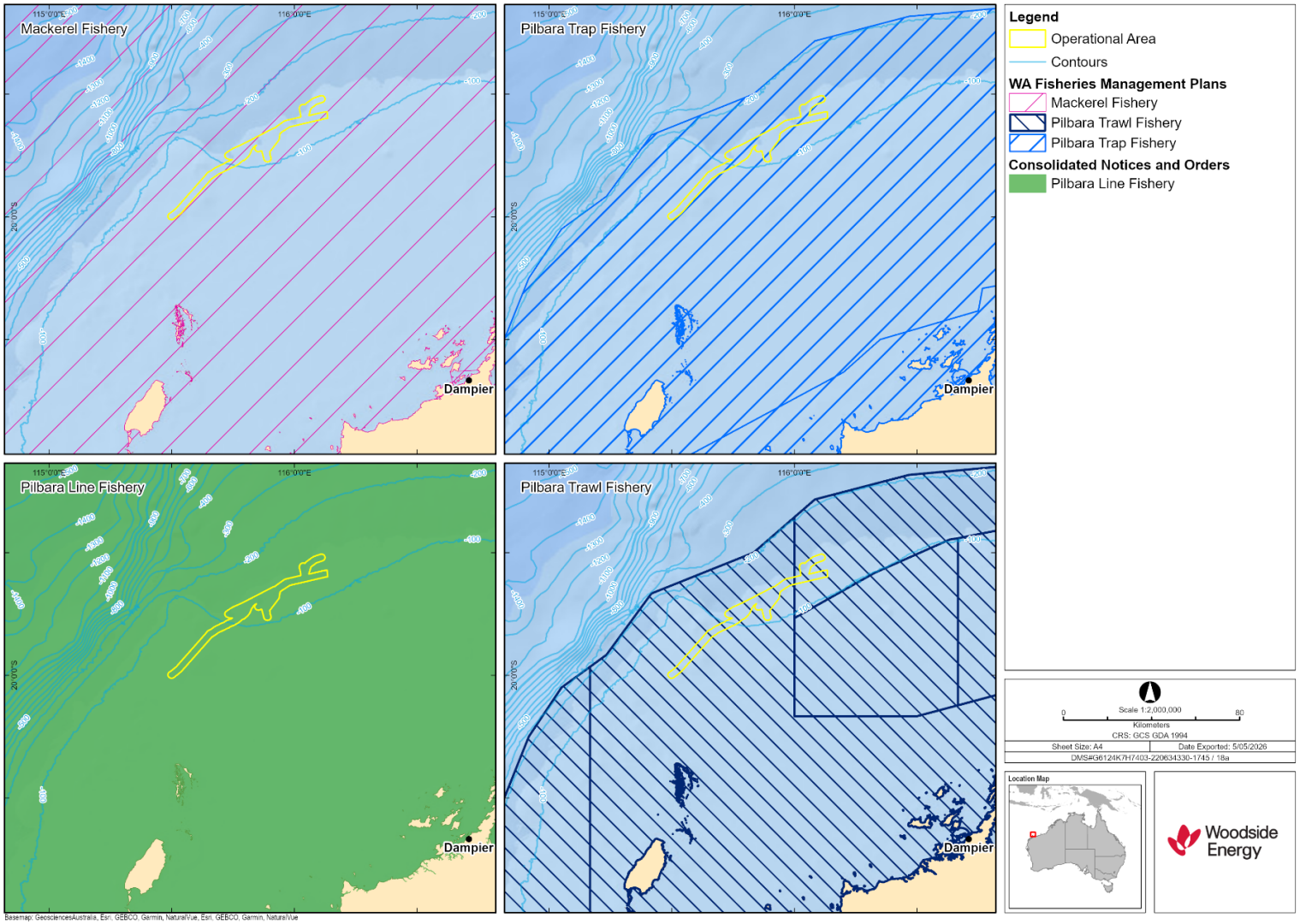


Figure 4-18: Mackerel, Pilbara trap, Pilbara line, and Pilbara trawl State-managed fisheries with a potential for interaction with the Petroleum Activity

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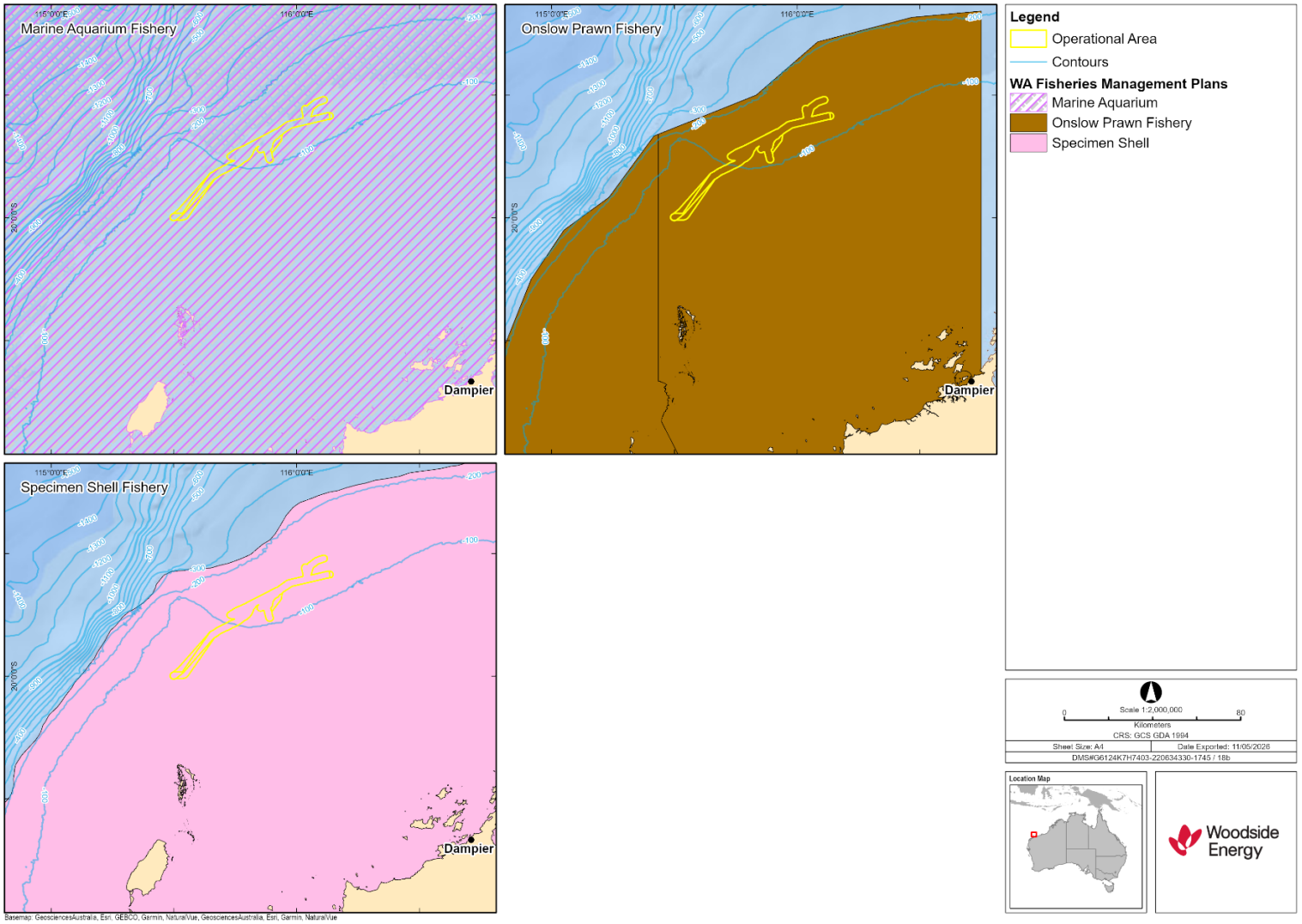


Figure 4-19: Marine aquarium, Onslow prawn, and specimen shell State-managed fisheries with a potential for interaction with the Petroleum Activity

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4.10.2 Traditional and customary fishing

Traditional or customary fishing is typically carried out in shallow coastal waters and/or areas with hard substrates such as reef. The Western Australia Recreational Fishing Guide (2024) states that Indigenous people do not need a recreational fishing licence, in any waters, if it is in accordance with continuing tradition, for individual or familial consumption, and not for a commercial purpose.

There are no traditional or customary fisheries within the Operational Area, as these are typically restricted to shallow coastal waters and/or areas with structures such as reefs. However, it is recognised that Barrow Island, Montebello Islands and Ningaloo Reef, all within the wider EMBA, have a known history of fishing when areas were occupied (as from historical records) (CALM 2005, DEC 2007).

Refer to Section 4.9.2 for coastally adjacent Indigenous groups which may undertake traditional fishing within the EMBA.

Traditional fishing methods in the NWMR are further described in Appendix C.

4.10.3 Tourism and recreation

No tourist activities take place specifically within the Operational Area. However, growth and the potential for further expansion in tourism and recreational activities is recognised for the Pilbara and Gascoyne regions, with the development of regional centres and a workforce associated with the resources sector (SGS Economics and Planning 2012).

Tourism is one of the major industries of the Gascoyne region and contributes significantly to the local economy in terms of both income and employment. The main marine nature-based tourist activities are concentrated around and within the Ningaloo Coast World Heritage Property (approximately 208 km south-west of the Operational Area). Activities undertaken include recreational fishing, snorkelling and scuba diving and wildlife watching and encounters (including whale sharks, manta rays, humpback whales and turtles) (Schianetz et al. 2009).

The Montebello Islands (38 km from the Operational Area) are the closest location for tourism with some charter boat operators taking visitors to these islands (DEC 2007).

Recreational fishing in the Pilbara and Gascoyne regions is mainly concentrated around coastal waters and islands and has grown considerably with the expanding regional centres, seasonal tourism and increasing residential and fly in/fly out work force, particularly in the Pilbara region (Fletcher et al. 2017). Some recreational fishing has historically taken place at Rankin Bank and the Glomar Shoal (approximately 3.7 km north-west and 51.5 km east of the Operational Area respectively). However, due to the distance from access nodes, such as Dampier and Onslow (approximately 138 km and 202 km from the Operational Area at the closest point respectively) recreational fishing effort is expected to be restricted to relatively large vessels and hence is considered to be low.

Tourism and recreation in the context of the wider North-west Marine Region is described in Appendix C.

4.10.4 Commercial shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR to reduce the risk of vessel collisions with offshore infrastructure. It is noted that the fairway overlaps the Operational Area west of the GWA platform (Figure 4-20). Vessel tracking data suggest shipping is concentrated to the south-east of the Operational Area, which is likely associated with ports.

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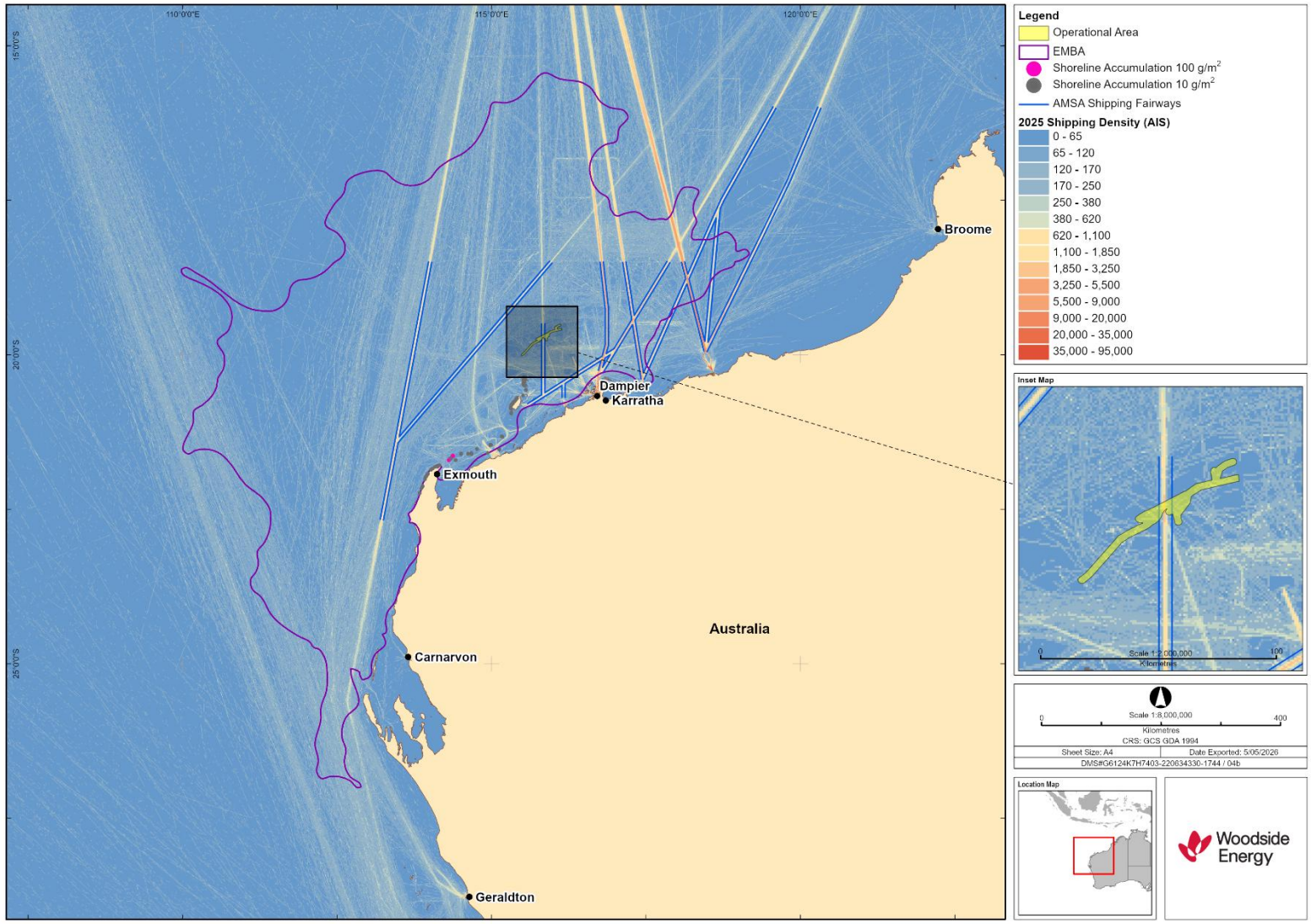


Figure 4-20: Vessel density map for the Operational Area and EMBA *(data derived from AMSA satellite tracking system data)*

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4.10.5 Oil and gas facilities, infrastructure and other industries

Table 4-25 details other oil and gas facilities, assets and infrastructure located within 50 km of the Operational Area. Appendix C describes current oil and gas development within the EMBA, also shown in Figure 4-21.

Table 4-25: Other oil and gas facilities within 50 km of the Operational Area

Facility or asset and Operator	Distance and direction from Operational Area
North Rankin Complex (Woodside)	Adjacent
Pluto (Woodside)	12 km west
Wheatstone Platform (Chevron)	18 km west
Armada Claire (Woodside)	31 km west
Okha (Woodside)	32 km west
Angel (Woodside)	44 km east
Campbell (Woodside)	50 km south-east
Reindeer (Santos)	50 km south-east

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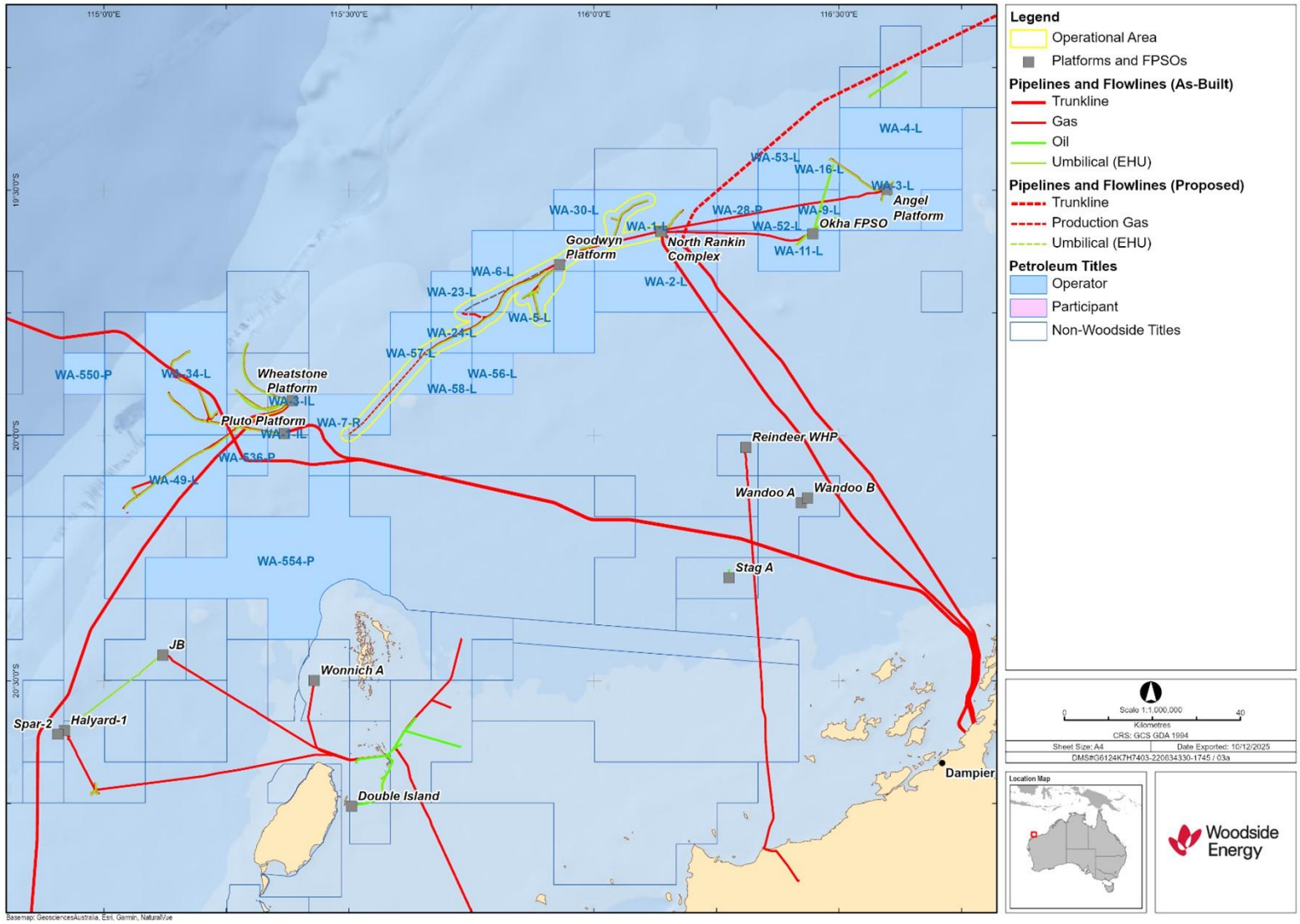


Figure 4-21: Oil and gas infrastructure near the Operational Area

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4.10.6 Submarine communications infrastructure

The Operational Area is in a region with submarine communications infrastructure. The submarine communications infrastructure located within 50 km of the Operational Area is listed in Table 4-26 and displayed in Figure 4-22.

Table 4-26: Communications infrastructure located within 50 km of the Operational Area.

Cable name	Cable description	Distance and direction from Operational Area (km)
Chevron Fibre Optic Cable Route	As Laid – BU5 to Wheatstone	Overlap
Chevron Fibre Optic Cable Route	As Laid – Wheatstone West	Overlap
Woodside Fibre Optic Cable Route	As-laid_BU7-CEM	Overlap
Woodside Fibre Optic Cable Route	As-laid_BU5-BU6-BU7	9.2
Woodside Fibre Optic Cable Route	As-laid_BU7-Tail	14.36
SCA Fibre Optic Cable	Project Highclere Segment 4.4 (Dorado)	14.75
Chevron Fibre Optic Cable Route	As Laid – BU5 to BU7 tail	15.64
Chevron Fibre Optic Cable Route	As Laid – Wheatstone West BU	17.34
Chevron Fibre Optic Cable Route	As Laid – Wheatstone East	20.35

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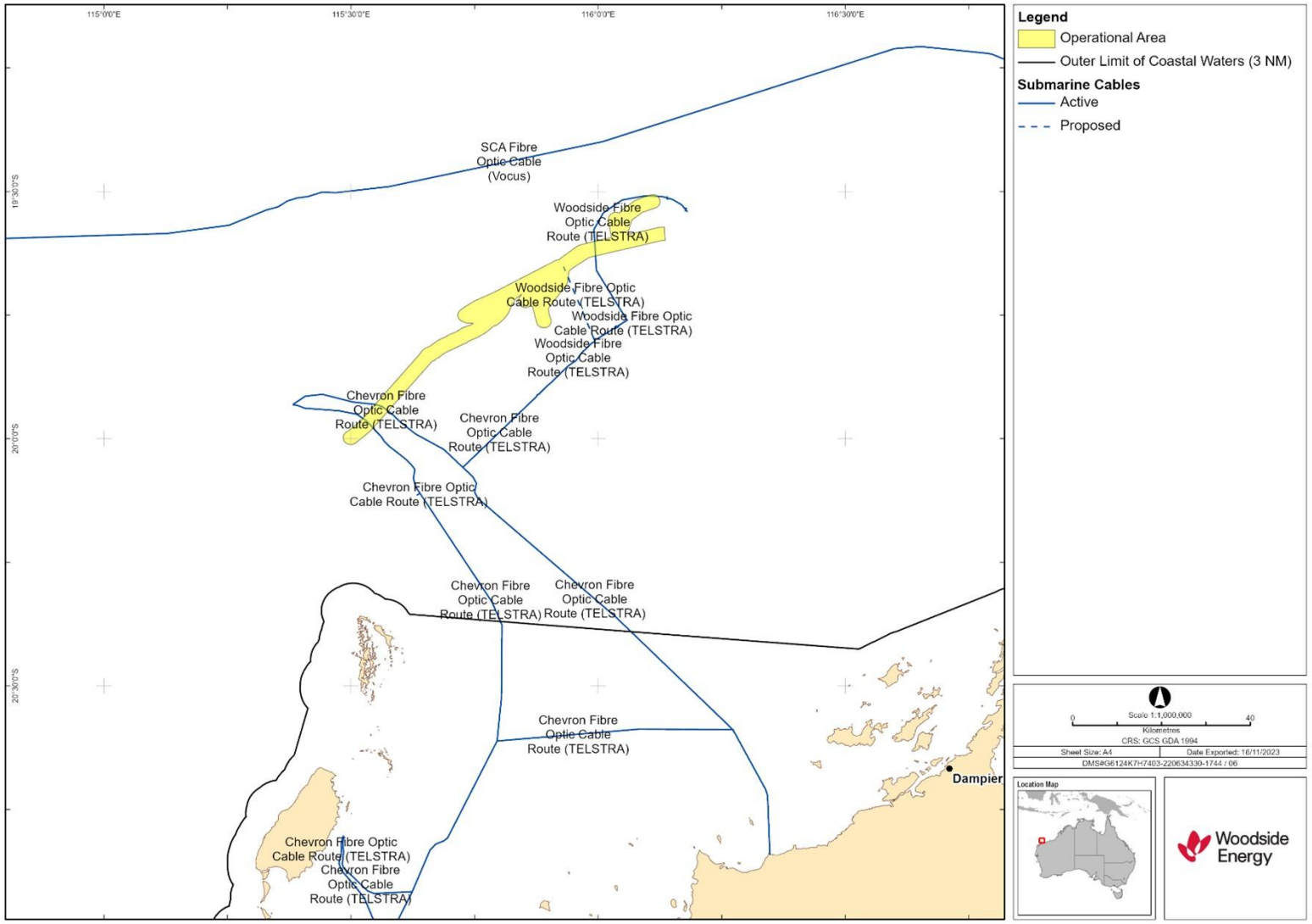


Figure 4-22: Submarine communications infrastructure near the Operational Area

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4.10.7 Defence

The are no defence areas overlapping the Operational Area. Defence areas overlapping the EMBA are presented in Figure 4-23. Appendix C describes key Department of Defence (DoD) areas and facilities in the NWMR for training and operational activities.

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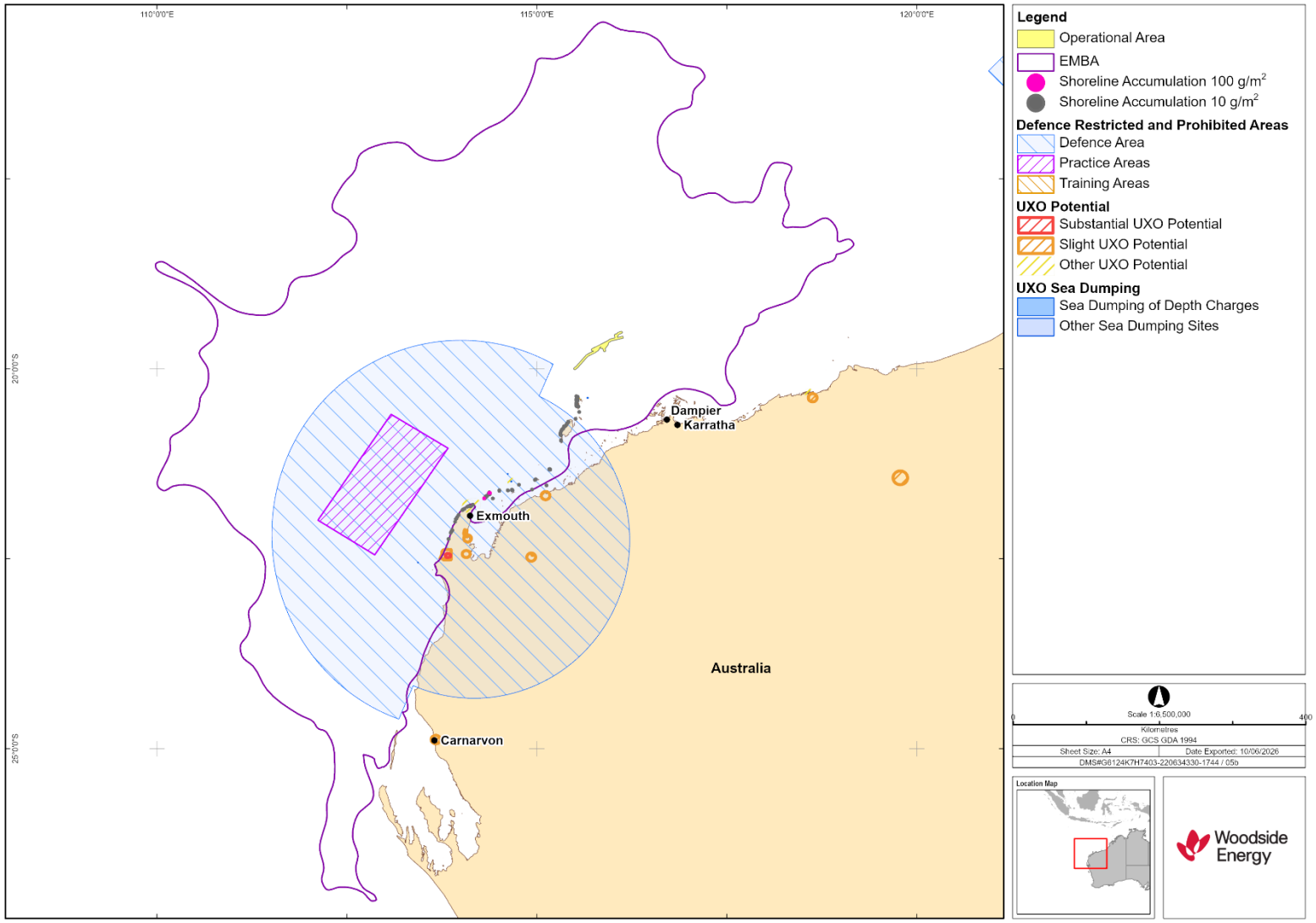


Figure 4-23: Defence areas within the EMBA

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5. STAKEHOLDER CONSULTATION

5.1 Summary

Woodside consults relevant persons in the course of preparing an EP in accordance with regulation 25 of the Environment Regulations. (In this Section, references to 'regulations' are to the Environment Regulations, unless otherwise stated).

The consultation process is designed to identify relevant persons and provide them with sufficient information and a reasonable period to allow them to make an informed assessment of the possible consequences of the proposed activity on their functions, interests or activities. This enables Woodside to assess the merits of objections or claims about the adverse impact of each activity to which the EP relates that are received from relevant persons and for Woodside to adopt appropriate measures (if any) in response to those objections or claims so that the activity is carried out in a manner by which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP) and will be of an acceptable level.

Consultation is informed by both the Environment Regulations and the findings of relevant Courts, including the Full Federal Court in the *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Tipakalippa Appeal) (see Section 5.2 and 5.5.1) and *Munkara v Santos NA Barossa Pty Ltd* (No 3) [2024] FCA 9 (Munkara Case).

For this EP, Woodside has considered both the Operational Area and the broader EMBA in undertaking consultation (see further discussion in Section 5.2). The broadest extent of the EMBA has been determined by reference to the highly unlikely event of a hydrocarbon release resulting from activities in the Operational Area (see Section 4).

Woodside's consultation methodology is divided into two parts:

- the first section (Section 5.2 to 5.5) provides an overview of Woodside's consultation methodology for its EPs, including how we apply regulation 25(1) to identify relevant persons
- the second section (Section 5.6 to 5.7) details Woodside's approach to accepting feedback and assessment of the merits of each objection or claim about the adverse impact of each activity to which the EP relates, and engaging in ongoing consultation for this EP.

Woodside's consultation record is in Appendix F and includes a summary of the following:

- assessment and identification of relevant persons
- consultation information provided to relevant persons, feedback received, Woodside's assessment of the merits of objections or claims and Woodside's response to relevant persons and other stakeholders Woodside chose to consult
- engagement with persons or organisations that Woodside chose to contact who are 'not relevant' persons for the purposes of regulation 25(1) (see Section 5.3.7)
- opportunities provided to persons or organisations to participate in consultation.

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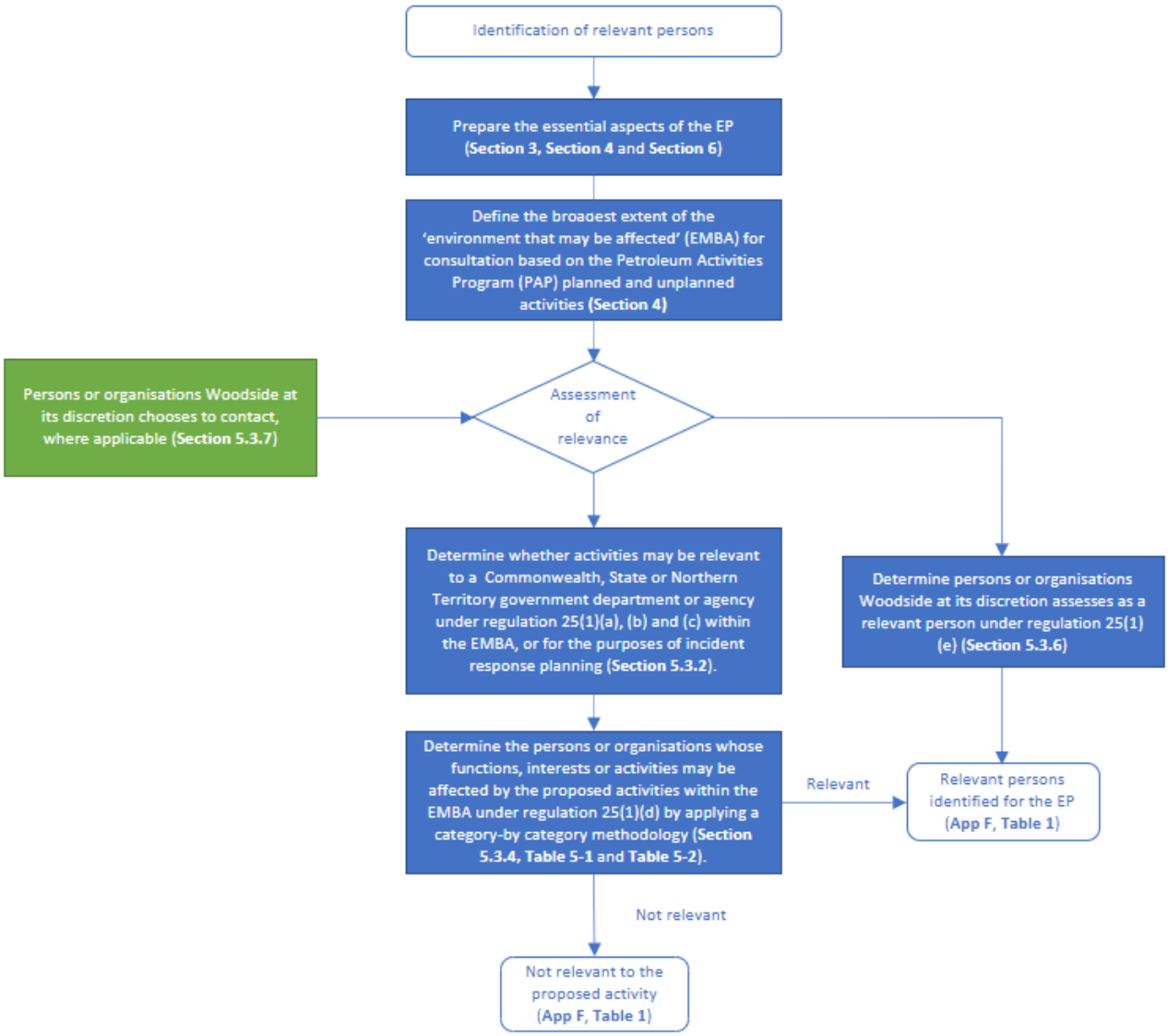


Figure 5-1: Overview of Woodside's methodology to identify relevant persons

5.2 Consultation – general context

Woodside has a portfolio of quality oil and gas assets and more than 40 years of operating experience. We have a strong history of working with local communities, the relevant regulators and a broad range of persons and organisations, to better understand the potential impacts and risks associated with our proposed activities and to develop appropriate measures to manage them.

The length of time that we have operated in Commonwealth and State waters, and the history of continued engagement with a wide range of persons and organisations, enables Woodside to develop an extensive consultation list to inform its consultation process. This consultation list is not used as a definitive list of persons to consult but, rather, assists Woodside as an input to its understanding of relevant persons with whom to consult on a Petroleum Activity. The information in the consultation list has been captured from years of experience; it contains insights relating to the type of information particular persons or organisations want to receive during consultation, the appropriate method of consultation for relevant persons and includes appropriate contact details, which are reviewed and updated periodically.

Woodside acknowledges NOPSEMA's GL2086 – *Consultation in the course of preparing an environment plan guideline (May 2023)* as well as judicial guidance in the *Tipakalippa Appeal* on the intent of consultation, as follows:

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- at paragraph 54 of the appeal decision: … *provide a basis for NOPSEMA's considerations of the measures, if any, that a titleholder proposes to take or has taken to lessen or avoid the deleterious effect of its proposed activity on the environment, as expansively defined*.
- at paragraph 89 of the appeal decision: …*its purpose is to ensure that the titleholder has ascertained, understood and addressed all the environmental impacts and risks that might arise from its proposed activity. Consultation facilitates this outcome because it gives the titleholder an opportunity to receive information that it might not otherwise have received from others affected by its proposed activity. Consultation enables the titleholder to better understand how others with an objective stake in the environment in which it proposes to pursue the activity perceive those environmental impacts and risks. As the Regulations expressly contemplate, it enables the titleholder to refine or change the measures it proposes to address those impacts and risks by taking into account the information acquired through the consultations. Objectively, the scheme intends that this is likely to improve the minimisation of environmental impacts and risks from the activity.*

The *Tipakalippa Appeal* and *Munkara Case* have also been further considered in the context of specific methods for consultation with Indigenous relevant persons (Section 5.5.1).

To undertake consultation, Woodside has developed a methodology for identifying relevant persons in accordance with regulation 25(1) (Section 5.3). This methodology is consistent with NOPSEMA's Guideline and demonstrates that, to meet the requirements of regulation 34 (criteria for EP acceptance) when preparing the EP, Woodside understands:

- our planned activities in the Operational Area, being the area in which our planned activities are proposed to occur (see Section 3.3)
- the geographical extent to which the environment may be affected (EMBA) by risks and impacts from our activities (unplanned) (identified in Section 4.1 and assessed in Section 6.8).

Woodside has undertaken consultation in the course of preparing this EP in compliance with regulation 25, which requires a Titleholder to:

- consult with each of the following (a relevant person) in the course of preparing an EP:
  - each Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the EP may be relevant
  - if the plan relates to activities in the offshore area of a State – the Department of the responsible State Minister
  - if the plan relates to activities in the Principal Northern Territory offshore area – the Department of the responsible Northern Territory Minister
  - a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP
  - any other person or organisation that the Titleholder considers relevant (regulation 25(1)).
- give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on their functions, interests or activities (regulation 25(2))
- allow a relevant person a reasonable period for the consultation (regulation 25(3))
- tell each relevant person that the Titleholder consults with, that the relevant person may request that particular information it provides in the consultation not be published and any information subject to such a request is not to be published (regulation 25(4)).

Further, Woodside seeks to carry out consultation in a manner that:

- is consistent with the principles of ecologically sustainable development (ESD) set out in section 3A of the EPBC Act – see Section 2
- is intended to reduce the environmental impacts and risks from the activity to ALARP and an acceptable level (regulation 4)

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- is intended to minimise harm to the relevant person and the environment from the proposed petroleum activities and to enable Woodside to consider measures that may be taken to mitigate the potential adverse environmental impacts from the petroleum activity
- is collaborative. Woodside respects that, for a relevant person, consultation is voluntary. Where the relevant person seeks to engage, Woodside engages with the relevant person with the aim of seeking genuine and meaningful two-way dialogue
- provides opportunities for relevant persons to provide feedback throughout the life of the EP through its ongoing consultation process (refer to Section 5.7 and Section 7.9).

An overview of Woodside's consultation approach is outlined at Figure 5-2.

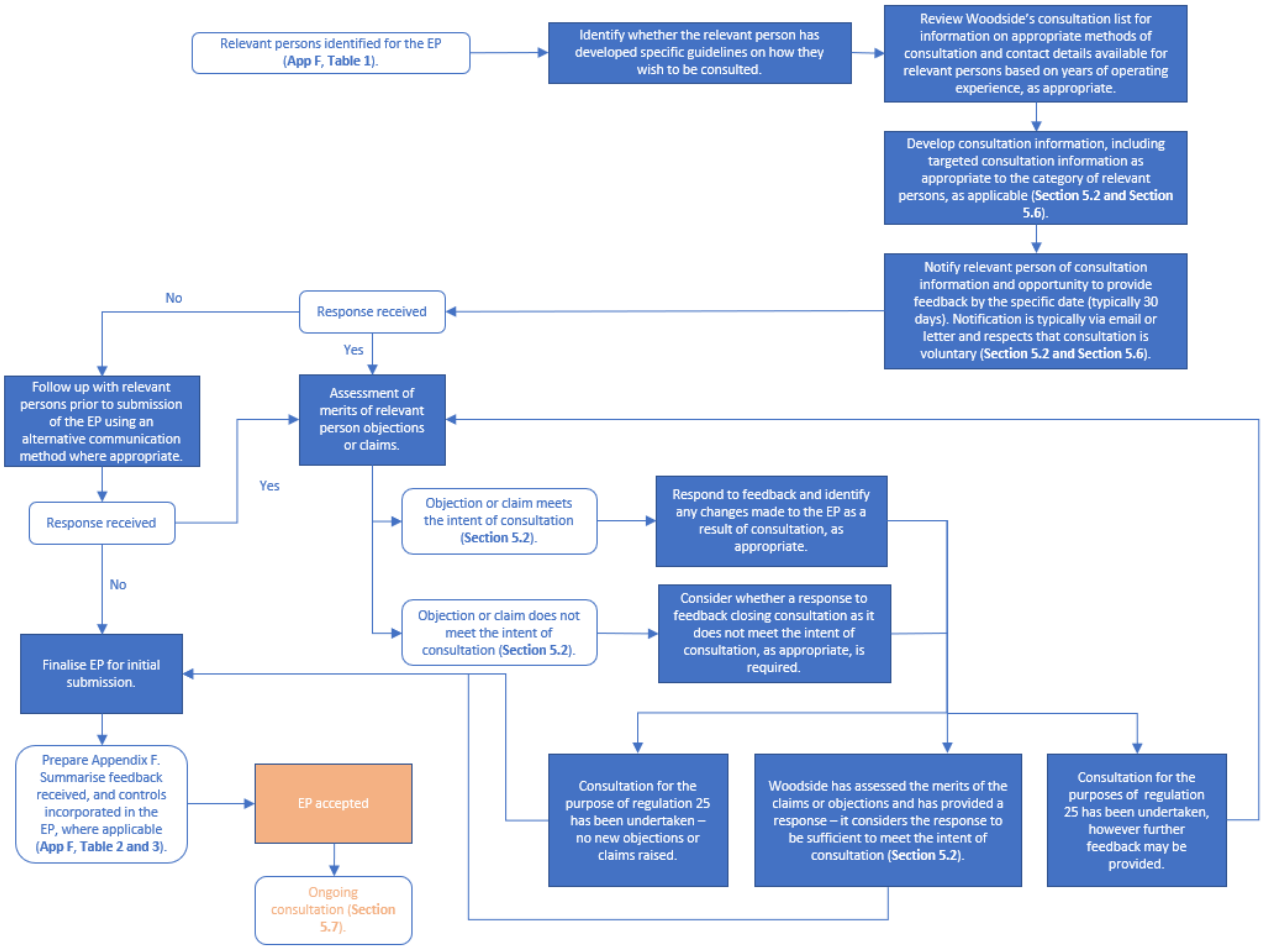


Figure 5-2: Overview of Woodside's consultation approach

The methodology for consultation for this activity has been informed by various guidelines and relevant information for consultation on planned activities, including:

Federal Court:

- Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193
- Munkara v Santos NA Barossa Pty Ltd (No 3) [2024] FCA 9

NOPSEMA:

- GL2086 – Consultation in the course of preparing an environment plan – May 2024
- GN1847 – Responding to public comment on environment plans – January 2024
- GN1344 - Environment plan content requirements - September 2020

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- GL1721 – Environment Plan decision making – January 2024
- GN1488 - Oil pollution risk management - July 2021
- GN1785 – Petroleum activities and Australian Marine Parks – January 2024
- GL 1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – August 2024
- PL9028 Managing gender-restricted information – December 2023
- Consultation on offshore petroleum environment plans – Information for the community

Department of Mines, Petroleum and Exploration (DMPE):

- Guideline for the development of Petroleum, Geothermal and Pipeline Environment Plans in Western Australia (November 2024)
- Guideline — Decommissioning of petroleum and geothermal energy property, equipment and infrastructure in Western Australian onshore areas and State coastal waters (March 2024)

Department of Climate Change, Energy, the Environment and Water (DCCEEW):

- Sea Countries of the North-West; Literature review on Indigenous connection to and uses of the North West Marine Region

Australian Fisheries Management Authority (AFMA):

- Petroleum industry consultation with the commercial fishing industry

Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF):

- Fisheries and the Environment – Offshore Petroleum and Greenhouse Gas Act 2006
- Offshore Installations Biosecurity Guide

WA Department of Primary Industries and Regional Development (DPIRD):

- Guidance statement for oil and gas industry consultation with the Department of Fisheries

WA Department of Transport and Major Infrastructure (DTMI):

- Offshore Petroleum Industry Guidance Note

WA Australian Fishing Industry Council (WAFIC):

- Oil and Gas Consultation Framework

Good practice consultation:

- IAP2 Public Participation Spectrum
- Interim Engaging with First Nations People and Communities on Assessments and Approvals under the Environment Protection and Biodiversity Act 1999

5.3 Identification of relevant persons for consultation

5.3.1 Regulations 25(1)(a), (b) and (c)

The relevant inquiry for determining relevant persons under regulations 25(1)(a) and (b) is whether the activities to be carried out under the EP may be relevant to one of the government departments or agencies in those regulations. The government departments and agencies relevant to the EP are listed in Appendix F, Table 1. In accordance with regulation 25(1)(b), Woodside consults with the Department of the relevant State Minister.

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5.3.2 Identification of relevant persons under Regulations 25(1)(a), (b) and (c)

Woodside's methodology for identifying relevant persons under regulations 25(1)(a), (b) and (c) is as follows:

- Woodside considers the defined responsibilities of each of the departments and agencies to which the activities to be carried out in the EMBA under the EP may be relevant. This list of relevant departments and agencies is formulated by reference to the responsibilities of the government departments, as set out on their websites, in *NOPSEMA's GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area guideline (January 2024)*, which describes where the Department is a relevant agency under the Environment Regulations, as well as experience and knowledge that Woodside has gained from years of operating. This list is revised from time to time, for example, for the purposes of accommodating government restructures, renaming of departments, shifting portfolios and/or to account for new agencies that might arise.
- Woodside has categorised government department or agency groups as per Table 5-1.

Table 5-1: Classifications of government department and agency groups

Government departments / agencies – marine	Agencies with legislated responsibilities for use of the marine environment.
Government departments / agencies – environment	Agencies with legislated responsibilities for the protection of the environment.
Government departments / agencies – industry	The legislated Department of the responsible Commonwealth, State or Northern Territory Minister for Industry.

- Woodside considers each of the responsibilities of the departments and agencies, determining whether those responsibilities overlap with potential impacts and risks specific to the Petroleum Activity in the EMBA. The assessment is both activity and location based.
- Woodside acknowledges the roles and responsibilities of government departments and agencies acting on behalf of various industry participants. For example, AMSA – Marine Safety is responsible for the safety of vessels and the seafarers who are operating in the domestic commercial shipping industry; and AHO is responsible for maritime safety and Notices to Mariners. To undertake proposed activities in a manner that prevents a substantially adverse effect on the potential displacement of marine users, Woodside therefore consults AMSA – Marine Safety and AHO on its proposed activities. Woodside considers each of the responsibilities of the departments and agencies and determines those that would either be involved in the incident response itself or in relation to the regulatory or decision-making capacity with respect to planning for the unlikely event of a worst-case hydrocarbon release incident response specific to the Operational Area/s. Feedback received, if any, is assessed in accordance with the intended outcome of consultation.
- the list of government departments and agencies assessed as relevant is set out in Appendix F, Table 1.
- feedback received, if any, is assessed in accordance with the intended outcome of consultation and summarised at Appendix F, Table 2 and Table 3 as appropriate to the relevance assessment.

Woodside does not consult with departments or agencies with interests that do not overlap with impacts or risks specific to the Operational Area or the EMBA or would not be involved in incident response planning.

5.3.3 Regulation 25(1)(d)

To identify a relevant person for the purposes of regulation 25(1)(d), the meaning of "functions, interests or activities" needs to be understood. In regulation 25(1)(d), the phrase "functions, interests or activities" should be construed broadly and consistently with the objects of the Environment Regulations (regulation 4) and the objects of the EPBC Act (Section 3A).

In developing its methodology for consultation, Woodside acknowledges the guidance from *NOPSEMA's GL2086 – Consultation in the course of preparing an environment plan guideline* (May 2023) (Table 5-2).

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Table 5-2: Guidance from NOPSEMA GL2086

Functions	Refers to a power or duty to do something.
Interests	Conforms to the accepted concept of 'interest' in other areas of public administrative law and includes any interest possessed by an individual whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation.
Activities	Broader than the definition of 'activity' in regulation 5 of the Environment Regulations and is likely be directed to what the relevant person is already doing.

Woodside's methodology for determining 'relevant persons' for the purpose of regulation 25(1)(d) includes consideration of:

- whether a person or organisation has functions interests or activities that overlap with the Operational Area and EMBA
- whether a person or organisation's functions, interests or activities may be affected by Woodside's proposed planned or unplanned activities.

5.3.4 Identification of relevant persons under Regulation 25(1)(d)

Relevant persons under regulation 25(1)(d) are defined as a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP. In identifying relevant persons, Woodside considers:

- the planned activities to be carried out under the EP (described in Section 3)
- the EMBA by unplanned events (identified in Section 4 and assessed in Section 6).

To identify relevant persons who fall within regulation 25(1)(d), Woodside adopts the following methodology and then undertakes consultation with relevant persons.

As a general proposition, Woodside assesses whether a person or organisation is a relevant person having regard to:

- whether a person or organisation has functions, interests or activities that overlap with the Operational Area/s and EMBA
- whether a person or organisation's functions, interests or activities may be affected by Woodside's proposed planned or unplanned activities to be carried out under the EP.

This assessment will include applying judgement, knowledge and considering available, relevant literature.

To assist in identifying the full range of relevant persons, Woodside considers the impacts and risks associated with its proposed activities and considers the broad categories of relevant persons who may be affected by the activities to be carried out under the EP. The broad categories are identified in Table 5-3 below and identification methodology applied as set out in Table 5-4.

The list of those persons or organisations assessed as relevant persons or organisations Woodside separately chose to contact is set out in Appendix F, Table 1.

Feedback received, if any, is assessed in accordance with the intended outcome of consultation and applying the categories of relevant persons methodology outlined in Table 5-3, as appropriate.

Feedback from relevant persons is summarised at Appendix F, Table 2. Feedback from persons assessed as 'not relevant' but whom Woodside chose to contact, or self-identified and Woodside assessed as 'not relevant', are summarised at Appendix F, Table 3.

Table 5-3: Categories of relevant persons

Category	Explanation
Commercial fisheries (Commonwealth and State) and peak representative bodies	Commonwealth or State Commercial Fishery with a fishery management plan recognised under the *Commonwealth Fisheries Management Act 1991* (Cth) and the *Western Australian Fish Resources Management Act 1994* (WA), which may be amended from time to time.

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Category	Explanation
	Commonwealth peak fishery representative bodies are identified by AFMA. WAFIC is the peak representative body for state fishers in Western Australia.
Recreational marine users and peak representative bodies	Charter boat, tourism and dive operators identified by DPIRD specific to the location of the proposed activity. Representative bodies are the recognised peak organisation(s) for recreational marine users.
Titleholders and Operators	Registered holder of an offshore petroleum title or greenhouse gas (GHG) title under the OPGGS Act and associated regulations.
Peak industry representative bodies	Recognised peak organisation(s) for the oil and gas sector.
Traditional Custodians (individuals and/or groups/entity)	Traditional Custodians are Indigenous Australians with cultural rights and interests or cultural functions or who perform cultural activities over particular lands and waters. Where an Indigenous person, group or entity self-identifies and asserts cultural rights, functions, interests or activities they will be considered under the definition of Traditional Custodian for the purpose of this EP (as appropriate).
Nominated Representative Corporations	Nominated representative corporations are Traditional Custodians nominated representative institutions such as Prescribed Body Corporates (PBC). PBCs are established under the *Native Title Act 1993* (Cth) by Traditional Custodians to represent their entire Traditional Custodian group (defined broadly by reference to descents from an ancestor set who were known to be the Traditional Custodians at the time of European colonisation) and their interests including, among other things, management and protection of cultural values.
Native Title Representative Bodies	A Representative Aboriginal/Torres Strait Islander Body (RATSIB) is a regional organisation appointed under the Native Title Act 1993 (Cth) with prescribed functions, set out in Part 11 of the *Native Title Act 1993* (Cth), which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies.
Local government and elected Parliamentary representatives and recognised local community reference/liaison groups or organisations	Local government body formed under the Local Government Act 1995 (WA) and elected Parliamentary representatives which are responsible for representing the local community. Recognised local community reference or liaison group or organisation in relation to oil and gas matters.
Other non-government groups, organisations or individuals	Non-government organisation with public website material targeting the proposed activity. Individual who demonstrates the proposed activity could potentially impact their interests, functions or activities.
Research institutes and local conservation groups or organisations	Research institutes are government or private institutions that conduct marine or terrestrial research. Local conservation groups are local non-government organisation that regularly conduct conservation activities focused on the local environment or wildlife.

Table 5-4: Methodology for identifying relevant persons within the EMBA undertaken under Regulation 25(1)(d) – by category

Category	Relevant person identification methodology
Commercial fisheries (Commonwealth and State) and peak representative bodies	Woodside assesses relevance for commercial fisheries (Commonwealth and State) and their representative bodies using the following next steps in its methodology:

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Category	Relevant person identification methodology
	• defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • confirming whether the EMBA overlaps with the fisheries management area (i.e., the spatial area the fishery is legally permitted to fish in) (see Section 4.10.1 • Woodside acknowledges WAFIC's consultation guidance[7], that Titleholders develop separate consultation strategies for significant unplanned events (for example an oil spill) where Titleholders can demonstrate the likelihood of such events occurring is extremely low. WAFIC's guidance is that consultation on unplanned events resulting in an emergency scenario should only be undertaken if an incident occurs (see Appendix G). • for Commonwealth and State commercial fisheries, Woodside assesses the potential spatial and temporal extent for interaction with the fishery by reviewing AFMA, ABARES and DPIRD Fishcube data within the Operational Area and EMBA (see Section 4.10.2). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.10.2) are assessed as relevant to the proposed activity. However, to avoid over consulting and as requested in WAFIC's guidance, Woodside only consults individual licence holders based on WAFIC's advice. Woodside also utilises WAFIC's consultation service whereby WAFIC: ○ directly consults fishery licence holders that are assessed as having a potential for interaction in the Operational Area ○ consults fisheries that are assessed as having a potential for interaction in the EMBA only in the event of an unplanned emergency scenario. • Commonwealth commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.10.2) are assessed as relevant to the proposed activity. Where a relevant fishery is identified, or where Woodside chooses to contact fisheries at its discretion, Woodside consults directly with individual licence holders in that fishery. • A Commonwealth fishery's representative body is assessed as relevant where the EMBA overlaps the fishery's management area, even where the fishery itself has been assessed as not relevant based on potential for interaction. This recognises the representative body's role in representing fishing entitlements and broader fisheries considerations within the management area. Recognised Commonwealth fishery representative bodies are identified by AFMA through information on its website. For State fisheries, representative bodies are assessed as relevant where the fishery they represent is assessed as relevant based on potential for interaction. WAFIC is the only recognised State fishery representative body.
Recreational marine users and peak representative bodies	Woodside assesses relevance for recreational marine users and peak representative bodies using the following next steps in its methodology: • using Woodside knowledge and operating experience, applying knowledge of recreational marine users in the area. This assessment is both activity and location based.

[7] *Consultation Approach for Unplanned Events - WAFIC*

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Category	Relevant person identification methodology
	• defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • assessing the potential spatial and temporal extent for interaction with recreational marine users by reviewing DPIRD Fishcube data to assess whether there has been activity within the EMBA in the past 5 years. Assessment of relevance: • recreational marine users that have been active in the past 5 years within the EMBA are assessed as relevant to the proposed activity. Woodside is provided with the contact details of charter, boat tourism and dive operators specific to the region of the EMBA by DPIRD to consult with the relevant persons. • if Woodside has identified recreational marine users as relevant persons, then Woodside also consults identified peak recreational marine user representative bodies. For example, Recfishwest represents the interests of recreational fishers. These representative bodies are identified via Woodside's existing consultation list, which is updated as appropriate via advice from known groups and DPIRD.
Titleholders and Operators	Woodside assesses relevance for other Titleholders and Operators using the following steps in its methodology: • using GPInfo to determine overlap with other Titleholders' or Operators' permit areas within the EMBA. • using Woodside knowledge and operating experience, applying knowledge of other operators in the area. • Woodside produces a map showing the outcome of this assessment. Assessment of relevance: • titleholders and operators whose permit areas are identified as having an overlap within the EMBA are assessed as relevant.
Peak industry representative bodies	Woodside assesses relevance for peak industry representative bodies using the following steps in its methodology: • review of peak industry representative bodies responsibilities that Woodside actively participates in, with consideration of overlap between industry focus area and Woodside's proposed activities within the EMBA. • review of Woodside's existing consultation list. • website search to identify whether any additional peak industry representative bodies have been created whose responsibilities may overlap with Woodside's proposed activities within the EMBA. Assessment of relevance: • peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside's proposed activities within the EMBA are assessed as relevant.
Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations	Consistent with its understanding of the matters discussed in Section 4.9, to identify Traditional Custodian groups or individuals, Woodside: • uses existing systems of recognition to identify Indigenous groups who overlap or are coastally adjacent to the EMBA (for example, recognition provided under Native Title or cultural heritage legislation, or marine park management plans, or identification by other Indigenous groups or entities) • notifies and invites consultation with Indigenous people through their nominated representative corporation (for example

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Category	Relevant person identification methodology
	Prescribed Bodies Corporate (PBCs)); or, in the case of Native Title and where appropriate, the Native Title Representative Body • requests the nominated representative body to forward the notifications and invitations to consult to their members (members are individual communal rights holders); • requests advice as to other Indigenous groups or individuals that should be consulted • advertises widely so as to invite self-identification and consultation by Indigenous groups and individuals. Further detail to Woodside's methodology is as follows. Woodside uses the databases of the National Native Title Tribunal: • to understand whether there are any Native Title Claims (historical or current) or determinations overlapping or coastally adjacent to the EMBA • to understand whether there are any relevant Indigenous Land Use Agreements (ILUAs), registered with the National Native Title Tribunal that overlap or are adjacent to the EMBA that may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. Where there is a positive determination of Native Title, contacting the PBC or, where their representative is a Native Title Representative Body, contacting the Native Title Representative Body. Where appropriate, contacting the relevant Native Title Representative Body to request a list of any Indigenous groups asserting Traditional Custodianship over an area of coastline adjacent to the EMBA. Review of Commonwealth and State Marine Park Management Plans that overlap the EMBA which may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. In Victoria, using the Victorian Aboriginal Heritage Council data to determine whether there are any Registered Aboriginal Parties (RAP) appointed under the Aboriginal Heritage Act 2006 (Vic), that overlap or are adjacent to the EMBA. Indigenous groups or individuals identified by a Traditional Custodian, nominated representative corporation, Native Title Representative Body. Request to the PBC to distribute Woodside consultation materials through its membership. Woodside is unable to contact this membership through any other means. Woodside has a number of public notification and information sharing processes by which individual Traditional Custodians can become aware of the proposed activity, its impacts and risks, and self-identify. Individuals that consider their functions, interests or activities may be affected by a proposed activity are provided an opportunity to self-identify for each EP. Woodside does not presume that self-identification for an activity, covered by another EP, automatically means that an individual/s functions, interests and activities may be affected by other activities where EMBAs overlap. This decision is for the individual to make. The public notification, information sharing, and consultation processes Woodside puts in place enables Traditional Custodians to become aware of proposed activities, assess impacts and risks to their values, and enable individuals to self-identify. Assessment of relevance: • Traditional Custodian groups, entities or individuals and Nominated Representative Corporations who are identified through the above methodology and overlap or are coastally adjacent to the EMBA are assessed as relevant.

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Category	Relevant person identification methodology
Native Title Representative Bodies	Woodside assesses relevance for Native Title Representative Bodies using the following steps in its methodology: • a Representative Aboriginal/Torres Strait Islander Body (RATSIB) is a regional organisation appointed under the Native Title Act 1993 with prescribed functions set out in Part 11 of the Native Title Act 1993, which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies. • review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA. Assessment of relevance: • where the area for which a Native Title Representative Body is recognised under the Native Title Act 1993, overlaps with the EMBA or is coastally adjacent to the EMBA, Woodside will assess the Native Title Representative Body as relevant.
Historical heritage groups or organisations	Woodside assesses relevance for groups or organisations whose responsibilities are focused on historical heritage using the following steps in its methodology: • using the Australasian Underwater Cultural Heritage Database to assess known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (see Section 4.9.1). Assessment of relevance: • where there is a known underwater heritage site (shipwrecks, aircraft and relics) within the EMBA, the relevant group or organisation that manages the site will be assessed as relevant.
Local government and recognised local community reference/liaison groups or organisations	Woodside assesses relevance for local government and recognised local community reference/liaison groups or organisations using the following steps in its methodology: • review of Woodside maps (developed based on data from the WA Local Government, Sport and Cultural Industries 'My Council' database and WA Local Government Association (WALGA) Local Government Directory maps to assess overlap between the local government's defined area of responsibility and the EMBA. • Woodside hosts regular community reference/liaison group meetings. Members represent a cross-section of the community and local towns interests. Representatives are from community and industry and generally include Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, community and industry organisations. Woodside considers these reference/liaison groups to be the appropriate recognised representatives of the local community for the oil and gas sector. • Woodside reviews the community reference/liaison group's terms of reference to determine its area of responsibility and overlap with the EMBA. For example, the Exmouth Community Liaison Group's area of responsibility in relation to Woodside's operational, development and planning activities, is defined in the terms of reference as the Exmouth sub-basin. Comparatively, the Karratha Community Liaison Group's area of responsibility is the Pilbara region (i.e., onshore). Assessment of relevance: • the local government whose defined area of responsibility overlaps the EMBA is assessed as relevant.

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Category	Relevant person identification methodology
	• the community reference/liaison group whose defined area of responsibility overlaps the EMBA is assessed as relevant and consulted collectively via the relevant reference/liaison group.
Other non-government groups, organisations or individuals	Woodside assesses relevance for other non-government groups, organisations or individuals using the following steps in its methodology: • review of Woodside's existing consultation list. • website search of registered non-government groups or organisations (i.e., registered with an Australian Business Number (ABN) and publicly available contact information) that may have public website and/or social media material specific to the proposed activity at the time of development of the EP. • organisation has a publicly available statement (or purpose) that clearly describes their collective functions, interests or activities. • review of current website and/or social media material to identify targeted information which demonstrates functions, interests or activities relevant to the potential impacts and risks associated with planned activities associated with the EMBA. • review of an organisation's/individual's feedback to consider whether their functions, interests or activities within the EMBA may be affected by the activities to be carried out under the EP. Considering interests outside the EMBA would be considered too remote and contrary to the purpose of EP consultation. Assessment of relevance: • registered non-government groups or organisations with current targeted public material specific to the proposed activity at the time of developing the EP and who have demonstrated functions, interests or activities relevant to the potential impacts and risks associated with planned activities in accordance with the intended outcome of consultation will be assessed as relevant. • individual demonstrates their functions, interests or activities may be impacted will be assessed as relevant.
Research institutes and local conservation groups or organisations	Woodside assesses relevance for research institutes and local conservation groups or organisations using the following steps in its methodology: • review of Woodside's existing consultation list. • website search for research institutes that may operate within the EMBA. This assessment is both activity and location based. • website search for local conservation groups or organisations that regularly conduct conservation activities within the EMBA. Assessment of relevance: • where there is known research being undertaken by a research institute within the EMBA, the research institute that is conducting the research will be assessed as relevant. • local environmental conservation groups who regularly conduct conservation activities or have demonstrated conservation functions, interests or activities within the EMBA are assessed as relevant. This assessment is both activity and location based.

5.3.5 Regulation 25(1)(e)

In addition to assessing relevance under regulation 25(1)(d), Woodside has discretion to categorise any other person or organisation as a relevant person under regulation 25(1)(e).

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5.3.6 Identification of relevant persons under Regulation 25(1)(e)

Woodside adopts a case-by-case approach for each EP to assess relevance under regulation 25(1)(e).

5.3.7 Persons or organisations Woodside chooses to contact

In addition to undertaking consultation with relevant persons under regulation 25(1), from time to time there are persons or organisations that Woodside chooses to contact in relation to a proposed activity. For example, these are persons or organisations:

- that are 'not relevant' pursuant to regulation 25(1) but that Woodside has chosen to seek additional guidance from, for example, to inform the correct contact person that Woodside should consult, or engage with
- that are 'not relevant' pursuant to regulation 25(1) but have been contacted as a result of consultation requirements changing or updated guidance from the Regulator
- where it is unclear what their functions, interests or activities are, or whether their functions, interests or activities may be affected. In this circumstance, engagement is used to inform relevance under Woodside's methodology. Woodside follows the same methodology for assessing a person or organisation's relevance as it does during its initial assessment (as described in Figure 5-1 and Section 5.3). The result of Woodside's assessment of relevance during the development of the EP is outlined at Appendix F, Table 1.

5.3.8 Assessment of relevant persons for the proposed activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25(1) is outlined at Appendix F, Table 1 and Appendix F, Table 2.

Persons or organisations that Woodside assessed as 'not relevant' but chose to contact at its discretion in accordance with Section 5.3.7, or self-identified and Woodside assessed as 'not relevant', are summarised at Appendix F, Table 1 and Appendix F, Table 3.

5.4 Consultation material and timing

Regulation 25(2) provides that a Titleholder must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person. Regulation 25(3) provides that the Titleholder must allow a relevant person a reasonable period for the consultation.

As set out in Section 5.2, Woodside notifies relevant persons of the proposed activities, respecting that consultation is voluntary, and collaborates on a consultation approach where further engagement is sought by the relevant person. The consultation process aims to be appropriate for the category of relevant persons and not all persons or organisations will require the same level of engagement. Woodside recognises that the level of engagement is dependent on the nature and scale of the Operational Area/s. Woodside acknowledges published guidance for good practice consultation, relevant to different sectors and disciplines. Woodside's methodology for providing relevant persons with sufficient information as well as a reasonable period of time to provide feedback is set out in this section.

5.4.1 Sufficient information

Woodside produces a Consultation Information Sheet for each EP. This is provided to relevant persons and organisations and is also available on Woodside's website for interested parties to access and to provide feedback on. The Consultation Information Sheet typically includes:

- a description of the proposed petroleum activity.
- the Operational Area
- where the activity will take place
- the timing and duration of the activity
- a location map of the Operational Area and EMBA

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- a description of the EMBA
- relevant exclusion zones
- a summary of relevant impacts and risks and mitigation and management control measures relevant to the proposed petroleum activity.

It also sets out contact details to provide feedback to Woodside.

The level of information necessary for a person or organisation to understand the impacts of the proposed activity on their functions, interests or activities may vary and may depend on the degree to which a relevant person is affected. For example, Woodside considers that relevant persons who may be impacted by planned activities in the Operational Area, as a result of temporary displacement due to exclusion zones, may require more targeted information relevant to their functions, interests or activities. Sufficient information may have been provided to a relevant person even where all documents requested by a relevant person have not been provided. Woodside acknowledges NOPSEMA's brochure entitled *Consultation on offshore petroleum environment plans information for the community*, which advises persons being consulted that they may inform Titleholders that they only want to be consulted in the very unlikely event of an oil spill.

Woodside places advertisements in selected local, state and national newspapers. This typically includes:

- the name of the EP Woodside is seeking feedback on
- an overview of the activity
- the consultation feedback date
- the ways in which a person or organisation can provide feedback.

Advertising in the local paper in the area of the activity is also consistent with the public notification process under section 66 of the Native Title Act 1993 for Native Title applications. Woodside typically aligns advertisement feedback timeframes with the timing described below. Feedback received is assessed in accordance with Section 5.3 to determine relevance and evidenced in Appendix F, Table 1 as appropriate.

Woodside utilises a range of tools to provide sufficient information to relevant persons, which may include one or more of the following:

- Consultation Information Sheet available on Woodside's website and shared directly with relevant persons
- Summary Consultation Information Sheet, presentations or summaries specific to a particular relevant person group
- subscription available on Woodside's website to receive notification of new Consultation Information Sheets for Woodside EPs
- emails
- letters
- phone calls
- face-to-face meetings (virtual or in person) with presentation slides or handouts as appropriate
- Let's Talk newsletter – digital and hard copy
- maps outlining a person or organisation's defined area of responsibility in relation to the proposed activity, for example a fisheries management area or defence training area
- community meetings, as appropriate
- attendance at on-the-ground community events or planned regional roadshows
- broader awareness campaigns on the how to be involved in the EP consultation process

Woodside recognises that information may be provided to relevant persons in an iterative manner during the consultation process. Woodside considers that genuine two-way engagement may be demonstrated via information on incorporation of controls, where applicable, being provided to the relevant person so that the relevant persons understand how their input has been considered in the development of the EP.

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Woodside communicates with relevant persons in different ways (Table 5-5). Woodside recognises that, as part of genuine two-way dialogue, these forms of communication may evolve including, for example due to changes to organisation representation, as relationships are further established, or a preference for an alternative form of communication is expressed by a person or organisation. There might be limitations in how Woodside can consult with relevant persons.

Table 5-5: Categories of relevant persons and typically accepted forms of communications

Category of relevant person	Typically accepted form of communication
Government departments / agencies – marine Government departments / agencies – environment Government departments / agencies – industry	Woodside applies NOPSEMA's guideline for engagement with Commonwealth government departments or agencies GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2024 by using email for its consultation unless another form of communication is requested. Other forms of communication, such as phone calls, meetings and/or presentation briefings are used on request.
Commercial fisheries and peak representative bodies Recreational marine users and peak representative bodies	**Commonwealth commercial fisheries**: Email is used as the primary form of communication with Commonwealth commercial fisheries in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. **State commercial fisheries and recreational marine users**: The Western Australian Department of Primary Industries and Regional Development (DPIRD) has responsibility for managing the Fish Resources Management Act 1994 and Aquatic Resources Management Act 2016, which limits the provision of contact details from the register to the name and business address of licence holders. Alternative forms of communication are at the licence holder's discretion. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. **Peak representative bodies**: Email is used as the primary form of communication with commercial fishery and recreational marine user peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Titleholders and Operators	Email is used as the primary form of communication between Titleholders and operators in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Peak industry representative bodies	Email is used as the primary form of communication with peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Traditional Custodians and nominated representative corporations	There are many forms of communication that Woodside uses on a case-by-case basis and as appropriate to or requested by the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used on request.
Native Title Representative Bodies	There are many forms of communication that Woodside uses on a case-by-case basis and as appropriate to or requested by the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used on request.
Historical heritage groups or organisations	NOPSEMA's guideline (GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2024) for engagement with government departments or agencies is used as a reference for Woodside's approach for communicating with historical heritage groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.

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Category of relevant person	Typically accepted form of communication
Local government and recognised local community reference/liaison groups or organisations	**Local government:** NOPSEMA's guideline (GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2024) for engagement with local government is used as a reference for Woodside's approach for communicating with historical heritage groups or organisations. **Community reference/liaison groups and chambers of commerce**: Email and presentations are used as the primary form of communication with local community reference/liaison groups or organisations in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Other non-government groups or organisations	Email is used as the primary form of communication with Other non-government groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Research Institutes and Local conservation groups or organisations	Email is used as the primary form of communication with research institutes and local conservation groups or organisations. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.

Information which is provided to relevant persons for the purposes of consultation on this EP is summarised at Appendix F, Table 2.

Appendix F, Table 3 sets out the information which is provided to persons or organisations that are 'not relevant' for the purposes of regulation 25 but which Woodside has chosen to contact.

When engaging in consultation, Woodside notifies relevant persons that, in accordance with regulation 25(4), the relevant person may request that the Titleholder notifies NOPSEMA that particular information the person or organisation provides in the consultation not be published, and that information subject to that request will not be published under the Environment Regulations.

5.4.2 Reasonable period for consultation

Woodside seeks to consult in order to support preparation of its EP. Woodside recognises that what constitutes a reasonable period for consultation should be considered on a case-by-case basis, with reference to the nature, scale and complexity of the activity.

Woodside recognises that information may need to be provided to relevant persons in an iterative manner during the consultation process. Woodside considers that genuine two-way engagement may be demonstrated via information on incorporation of controls, where applicable, being provided to the relevant person so that the relevant person understands how their input has been considered in the development of the EP.

Woodside's methodology allows relevant persons a reasonable period for consultation (regulation 25(3)). A reasonable period for all relevant persons, including Traditional Custodians, to participate in consultation for this EP has been provided.

The consultation period under this EP has satisfied benchmark periods under other relevant legislative processes:

- Regulation 30 sets out a public consultation period of 30 days.
- The Department of Mines, Petroleum and Exploration (DMPE) *Guidelines for Consultation with Indigenous People by Mineral Explorers* directs a period of 21-30 days of consultation with traditional owners.

This period of consultation demonstrates that Woodside has provided a "reasonable period" for relevant persons to consult in accordance with regulation 25(3). Commentary in the *Tipakalippa Appeal* judgment limits consultation to a process that must be capable of being discharged within a reasonable time:

"it must be taken to be the regulatory intention that the consultation requirement cannot be one that is incapable of being complied with within a reasonable time..."

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Woodside seeks feedback in order to support preparation of its EP. What constitutes a reasonable period for consultation is considered on a case-by-case basis, with reference to the person being consulted and the nature, scale and complexity of the activity.

Woodside's typical approach to providing a reasonable period for consultation is as follows:

- advertising in selected local, state and national newspapers to give persons or organisations the opportunity to understand the activity and identify whether their functions, interests or activities may be affected
- providing consultation materials directly to identified relevant persons as well as persons who are 'not relevant' but Woodside chose to contact and providing a target date for feedback. Woodside acknowledges that feedback may be received from relevant persons following the target date
- acknowledging that the way in which Woodside provides consultation information may vary depending on the relevant person or organisation and, may depend on the degree to which a relevant person or organisation is affected. Different consultation processes may be required for relevant persons and organisations depending on the information requirements
- following up with relevant persons prior to EP submission. Where possible, Woodside will endeavour to use an alternative method of communication to contact the relevant person
- engaging in two-way dialogue with relevant persons or organisations where feedback is received.

Appendix F, Table 2 and Table 3 sets out a history of ongoing consultation and demonstrates that a reasonable period of consultation has been provided.

Woodside considers that consultation for this EP has closed.

As detailed in Section 5.6, if comments and feedback are received after the EP has been submitted, Woodside will consider those comments and update controls as appropriate and at all stages of the life of the EP as per Woodside's ongoing consultation approach described in Section 5.7.

5.4.3 Discharge of Regulation 25

The Full Federal Court made clear in the *Tipakalippa Appeal* that consultation should be approached in a "*reasonable*", "*pragmatic*" and "*not so literal*" way, so that consultation obligations were capable of being met by Titleholders (Section 5.5.1). Consultation is a "*real world activity*" and must be capable of reasonable discharge. The Full Federal Court referred to Native Title cases as an illustration that reasonable limits should be applied to consultation efforts to ensure the process is workable.

When the Titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, then regulation 25 consultation requirements are met. Meeting these obligations requires evaluative judgement to determine reasonable satisfaction of the consultation obligation and, as such, the Regulator uses its discretion to determine if these criteria are met. The nature of the person being consulted and their function, interest and activity that may be affected, will inform the manner of consultation and the reasonable period to be afforded.

While a Titleholder is required to provide an opportunity to consult, the Titleholder is not required to obtain consent to engage in the activity from a person being consulted, or confirmation from a person being consulted, that consultation is complete. The Federal Court has commented that a "reasonable opportunity" for consultation must be afforded to relevant persons. A reasonable opportunity may not be every opportunity requested and is limited to reasonable opportunities to consult.

Woodside has completed steps required to discharge its consultation obligations. Woodside has provided sufficient information and a reasonable period of time to enable relevant persons to make an informed assessment of the possible consequences of the activity on their functions, interests or activities; and sufficient time to provide relevant feedback for Woodside to assess relevant persons' objections or claims. Woodside has also provided a reasonable opportunity for there to be genuine two-way dialogue on a person's claims or objections.

Woodside has discharged its duty under regulation 25 and considers that it is complete.

Appendix F, Table 2 and Table 3 of this EP set out the history of consultation under regulation 25. To the extent a relevant person says that they have further information to share or claims that consultation under

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regulation 25 has not been completed, Appendix F, Table 2 and Table 3 provide reasons why Woodside considers consultation under regulation 25 has been met, in relation to that relevant person.

5.5 Context of consultation approach with Traditional Custodians

To comply with regulation 25, Woodside identifies and consults Traditional Custodians whose functions, interests or activities may be affected by the activities under an EP.

5.5.1 Approach to methodology − Woodside's interpretation of Tipakalippa Appeal

Woodside has implemented a consultation methodology consistent with regulation 25 and guidance provided in the Tipakalippa Appeal (Section 5.2). Woodside's consultation methodology allows for a sufficiently broad capture of Traditional Custodian relevant persons, provides for informed consultation, follows cultural protocols and allows a reasonable opportunity for consultation with Traditional Custodians whose functions, interests or activities may be affected by the activity described in this EP (Section 5.5.3 to 5.5.7).

Woodside notes the Full Federal Court discussed several *Native Title Act 1993* (Cth) cases in response to a submission made in that case that a requirement under regulation 25 to consult "each and every" relevant person would be "*unworkable*". The reference to Native Title cases dealt with how decision-making processes under the NTA requiring "all" members of a group to be contacted for communal approval are interpreted by courts in a "*reasonable*", "*pragmatic*" and "*not so literal*" way, and how obligations to consult "*each and every*" person under regulation 25 should be interpreted in a similarly pragmatic way, so that consultation is workable. The reference to NTA authorities was made by analogy:

"It can be seen that the terms of [the native title legislation] are somewhat absolute – "all". However, [the native title legislation] has consistently been construed in a way that is not so literal … The cases concerning [the native title legislation] … have reiterated … that [the native title legislation] does not require that "all" of the members of the relevant claim group be involved in the decision. The key question will be whether a reasonable opportunity to participate in the decision-making process has been afforded by the notice for a relevant meeting."

"We consider the authorities in relation to processes under the NTA to be illustrative of how a seemingly rigid statutory obligation to consult persons holding a communal interest may operate in a workable manner" (emphasis added).

"…there is no definition of what constitutes "consultation for the purpose of Reg11A [now regulation 25] ... A titleholder will need to "demonstrate" to NOPSEMA that what it did constituted consultation appropriate and adapted to the nature of the interests of the relevant persons" (emphasis added).

The Judgment in the Tipakalippa Appeal makes it clear that a Titleholder will have some decisional choice in identifying which person(s) are to be approached, how the information will be given to allow the "relevant person" to assess the possible consequence of the proposed activities on their functions, interests or activities, and how the requisite consultation is undertaken. Consultation is not fixed to a rigid process and will be adapted so that it is informed by the relevant person or group. Woodside has met its regulation 25 requirements through its consultation methodology (Section 5.2).

Consistent with the Tipakalippa Appeal, Woodside considers NTA-style "*full group*" meetings are not required for there to be compliance with regulation 25. Nominated representative corporations (such as PBCs established under the NTA) have a designated role of representing the views of their member Traditional Custodians. They have established methods for engaging with their own members. Woodside will not undermine the purpose and authority of nominated representative corporations by requiring full group meetings where the nominated representative corporations have not requested engagement of members via full group meetings. It is not appropriate for Titleholders to direct or challenge the nominated representative corporations on how to engage with their members.

Woodside's approach described below demonstrates that sufficient information and a reasonable opportunity is provided to individual Traditional Custodians to provide feedback on Woodside activities beyond the opportunity provided to nominated representative corporations.

5.5.2 Consultation method

Woodside's Indigenous Affairs team has experience in engaging and working with Traditional Custodian organisations and individuals, including within the Commonwealth Native Title and cultural heritage systems,

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and state and territory cultural heritage and land rights systems. The team understands the complexities of making information accessible to groups and individuals and engaging in accordance with Traditional Custodian groups' established channels of communication and methods of consultation. Woodside's Indigenous Affairs team exercises its professional judgement and is respectful of long-standing relationships (where in place) when considering consultation with Traditional Custodian groups. The Indigenous Affairs team's approach is also informed by the established systems of recognition for Traditional Custodian groups and their nominated representative corporations within particular jurisdictions.

For example, the methodology for engaging with Traditional Custodian groups in the Northern Territory ('not relevant' for this EP) tends to centre around engagement through Aboriginal land councils (under the *Aboriginal Land Rights (Northern Territory) Act 1976* (*Cth*)) as well as community meetings that target clan groups where they do not have PBCs or other nominated representative corporations to represent them.

By contrast, recognition for Traditional Custodian groups and their nominated representative corporations in Western Australia falls under the *Native Title Act 1993 (Cth*) because the vast majority of the Western Australian coastline is settled under the Native Title regime. This means that the methodology and process for consultation in Western Australia places greater emphasis on, but is not limited to, Native Title Representative Bodies and PBCs.

Native Title determinations provide certainty about the appropriate Traditional Custodian groups that have the cultural authority to speak for country adjacent to the EMBA and help Woodside to identify Traditional Custodian persons and groups asserting Traditional Custodianship. The Judgment in the *Tipakalippa Appeal* endorses methods of consultation with groups of relevant persons that are appropriate and adapted to the characteristics of groups.[8] Woodside's consultation methodology is adapted and appropriate to the recognised systems of communal interests in Western Australia.

In Western Australia (relevant for this EP), Woodside has sought to follow the established, effective and respectful means of communication used by Native Title Representative Bodies and nominated representative corporations (including PBCs) with their respective Traditional Custodian communities. Woodside follows these processes for the appropriate broad capture of individuals' awareness of our activities, to self-identify (Section 5.5.4), and to provide feedback to inform the management of environmental impacts and risks.

Using these processes, Woodside communicates information about EPs by:

- advertising in relevant Indigenous and non-Indigenous newspapers. This encourages self-identification, by advertising proposed activities widely through newspapers that have national and intra-state circulation, i.e., Koori Mail, National Indigenous Times, The West Australian.
- creating carefully considered Summary Consultation Information Sheets with content developed by Woodside's Indigenous Affairs Team to remove jargon and present information in a simplified format.
- directing contact through nominated representative corporations.
- using social media (i.e. Facebook/Instagram), texts, phone calls and emails. These mediums are one of the preferred communication methods used by Traditional Custodians throughout Western Australia and, on that basis, used by Native Title Representative Bodies and other government agencies and industry, to engage with Traditional Custodians or call meetings. Indigenous woman Professor Bronwyn Castle, through 10 years of research, found *"Social media is an intrinsic part of daily life. The use of Facebook is around 20 per cent higher [among Indigenous peoples] than the national average across all geographical locations*" (Social media mob: being Indigenous online, Professor Bronwyn Carlson (2018)).
- for ongoing consultation post Regulation 25 consultation, Woodside supports ongoing engagement with Traditional Custodians. Woodside is committed to ongoing engagement and support to care for and manage country, including Sea Country, basing members of its Indigenous Affairs team in Karratha and Roebourne who serve as on-Country points of contact for Traditional Custodian organisations and individuals. These team members have broad local knowledge and established, on-the-ground relationships within communities. This helps contribute to positive outcomes including distributing

[8] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at paragraph [95].[104].[153].*

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information and providing notice to the community to support Traditional Custodian attendance and involvement at Woodside's information sessions and Community roadshows.

- ensuring that from the commencement of engagement with Traditional Custodians, Woodside seeks direction on how they prefer to be consulted and has consulted accordingly. Consultation processes that are informed by Traditional Custodians and co-designed on a case-by-case basis and includes their direction as to cultural protocols, structure of consultation and who to appropriately consult with (such as elders).
- holding meetings on Country at a place and time agreed with Traditional Custodians and offering and providing financial assistance for meeting expenses (as appropriate).
- providing information specifically designed to be easily understood, to reach all relevant people, and give a reasonable period of time for those people to make an informed assessment of the possible consequences of the proposed activity on them.

The Indigenous Affairs team approach to consultation is also consistent with the Federal Court's decision in the *Munkara Case*. The *Munkara Case* notes that the word "*culture*" (and hence the word "*cultural*") has a communal aspect to it. To establish cultural features, it is necessary that the beliefs and values are held by the relevant people *as a people*. For values, features or beliefs that are expressed by an individual to be "*cultural*" they cannot simply be an individual's belief - the belief must have a communal aspect too, and demonstrate that the "*individual beliefs are broadly representative of the beliefs of other members of the group*"[9]. The phrase "*cultural features*", when applied to "*people*" as constituent parts of an ecosystem, is not directed to idiosyncratic views or beliefs of an individual[10]. When the Indigenous Affairs team is told that a particular value is cultural by an individual Traditional Owner, that information is taken back to the relevant cultural authority to test its broad acceptance. In the case of gender sensitive information, that information would be restricted to the specific gender within the community.

5.5.3 Identification of relevant persons

To undertake consultation, Woodside has developed a methodology for identifying relevant persons, in accordance with regulation 25(1) (Section 5.2 and 5.3).

Specific to Woodside's approach for identifying relevant Traditional Custodians, Woodside's Indigenous Communities Policy and consultation approach is guided by Traditional Custodians by directing consultations through their nominated representative corporation. This has been implemented by Woodside through consultation with a nominated representative corporation, where that corporation has advised Woodside that it acts as the representative body for a Traditional Custodian group and has requested that Woodside engage with it as the representative body for that Traditional Custodian group.

Woodside asks nominated representative corporations (such as PBCs) and Native Title Representative Bodies to identify individuals that should be consulted, and enables individuals to self-identify in response to national and local advertising, social media and community engagement opportunities (Section 5.5.4). Where there is a nominated representative corporation for an area, unless directed by the nominated representative corporation, Woodside does not directly approach individuals for consultation, because this has the potential to undermine the role of the nominated representative corporation. Approaching individuals directly is a practice that is no longer considered acceptable because of divisions it has been shown to cause in communities. In addition to asking for the identification of individuals, Woodside also asks nominated representative corporations to distribute consultation information to whomever the nominated representative corporations deem appropriate, including members of the nominated representative corporations who are communal rights holders.

Having said this, as set out in further detail in Section 5.5.4 below, individuals are also given the opportunity to self-identify, consult and provide their own feedback on the proposed activity. When approached in this way, Woodside will engage individuals as relevant persons and will also (subject to any confidentiality or cultural restrictions) advise the nominated representative body of the consultation where it relates to cultural values. These methods of consultation are consistent with requirements for notification under the *Native Title*

[9] *Munkara v Santos NA Barossa Pty Ltd (No 3) [2024] FCA 9 at [205]*

[10] *Munkara v Santos NA Barossa Pty Ltd (No 3) [2024] FCA 9 at [205]*

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Act 1993 (Cth), such as under the future act provisions (section 29), which requires notification of the Native Title Representative Body, the PBC (or nominated representative) and notification through newspapers. The notification process has been selected as a respectful, practical and pragmatic analogue for consultation with Indigenous peoples, rather than requiring members to be notified via a formal authorisation process which seeks, from members, authorisation of agreements and Native Title/compensation claims under the *Native Title Act 1993* (*Cth*)[11].

In this consultation, Woodside requested nominated representative corporations to identify any potential individual relevant persons for consultation. Woodside requests nominated representative corporations to distribute consultation materials to their members. However, Woodside recognises that the process is voluntary and that it cannot compel nominated representative corporations (such as PBCs) to do so. Woodside also recognises that it would not be appropriate to seek to audit the nominated representative corporations for compliance with any member consultation request.

5.5.4 Opportunity to self-identify and identifying other individuals

Woodside requests nominated representative corporations and Native Title Representative Bodies to identify other individuals to consult with or individuals who may seek to self-identify for a proposed activity. Woodside also advertises broadly through Indigenous, national and local advertising, social media and community engagement opportunities to provide individuals with an opportunity to consult. Woodside does not directly approach individuals for consultation, as this undermines the role of the nominated representative corporations (Section 5.5.3). Woodside's approach to providing individual Traditional Custodians the opportunity to self-identify and consult for an EP is as follows:

- Woodside applies the principles of self-determination when consulting with Traditional Custodians by consulting through the Traditional Custodians authorised representative entities.
- recognising the function of nominated representative corporations (such as PBCs) and Native Title Representative Bodies to represent communal interests and manage cultural values, Woodside requests that the information provided to representative entities is provided to their members but Woodside recognises the process is voluntary and Woodside cannot compel them to do so, nor seek to audit the representative entities for compliance with any request.
- representative entities cannot provide membership details to Woodside due to individual confidentiality requirements.
- Woodside requests advice as to who else Woodside should be consulting but recognises the process is voluntary and cannot compel nominated representative corporations to provide this information.
- modern Indigenous engagement practises rely on the building and maintaining of respectful relationships. To date, most nominated representative corporations have requested the building of that relationship, where one is not already in place.
- while Woodside has, in some cases, approached individual directors and Elders outside of this process due to requirements imposed in EP consultation, this approach is considered inappropriate by modern Indigenous engagement standards, fundamentally undermining the authority of the authorised representative entity and can be detrimental to the relationship.

For this proposed activity, Woodside requested nominated representative corporations (including PBCs) and Native Title Representative Bodies to identify any potential individual relevant persons for consultation, and to distribute consultation materials to their member base. However, Woodside recognises the process is voluntary and it cannot compel them to do so nor seek to audit the representative entities for compliance with any request. Woodside has not been directed to engage individual Traditional Custodians by nominated representative corporations for this proposed activity. Woodside has nevertheless provided reasonable opportunity for individual Traditional Custodians to engage in consultation through appropriate and adapted consultation methods.

[11] *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193, at [104]*

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5.5.5 Sufficient information

Woodside recognises that the information sufficient to allow a person or organisation to make an informed assessment of the possible consequences of the proposed activity on their functions, interests or activities may vary and may depend on the degree to which a relevant person is potentially affected.

Woodside produces Consultation Information Sheets for each EP which is provided to relevant persons and organisations for the purpose of seeking feedback on the activity (Section 5.4.1). In response to feedback from Traditional Custodians on information provisions, Woodside has tailored effective consultation methods for its activities. These methods are specifically designed for Traditional Custodians, so that information is provided in a form that is readily accessible and appropriate. The targeted Summary Information Sheet is developed and reviewed by Woodside's Indigenous Affairs Team to ensure that content is appropriate to the intended recipients, which is then provided to relevant Traditional Custodian groups. Phone calls are made to provide context to the consultation.

Where face-to-face consultation meetings are requested, Woodside coordinates engagement at the Traditional Custodians location of choice (where practicable) and with their nominated attendees. Along with members of Woodside's Indigenous Affairs engagement team, key personnel and environmental experts are typically present to enable effective communication and prompt response to questions. Materials for these sessions typically incorporate visual aids such as photos, maps and videos, and plain language suitable for people with a non-technical background.

During consultation, Woodside provides relevant persons with additional information as appropriate in response to requests. There is no requirement to provide relevant persons with all information or documents requested and a Titleholder will have provided sufficient information even where it has not provided all information or documents requested.

Woodside has sought to provide sufficient information to individual members of nominated representative corporations (such as PBCs) by providing information to representative bodies and requesting dissemination with members. However, Woodside recognises consultation is voluntary and it cannot compel them to do so, nor would it be appropriate to seek to audit the representative entities for compliance with any request.

5.5.6 Reasonable period for consultation

Woodside seeks to consult in order to support preparation of its EP. Woodside recognises that what constitutes a reasonable period for consultation should be considered on a case-by-case basis, with reference to the nature, scale and complexity of the activity (Section 5.4.2).

5.5.7 Discharge of Regulation 25

Woodside's consideration and approach to discharging regulation 25 for relevant persons is discussed in Section 5.4.3. In addition to this, Woodside has considered the application of regulation 25 specific to Traditional Custodians based on the Tipakalippa Appeal.

In relation to Traditional Custodian relevant persons (and all relevant persons), Woodside has discharged its duty under regulation 25 of the Environment Regulations. Woodside considers that consultation under regulation 25 is complete (Section 5.4.3).

5.6 Providing feedback and assessment of merit of objections or claims

There are a number of ways in which feedback can be provided. Feedback can be provided through the Woodside feedback email or via the Woodside feedback toll free phone line as outlined in the Consultation Information Sheet and the Woodside website. Where appropriate, consultation may also be supported by phone calls or meetings. An EP feedback form is also available on Woodside's website enabling stakeholders to provide feedback on proposed activities, or to request additional information.

Woodside consults widely on its EPs and notes that feedback is received in various forms. Feedback that is considered inappropriate or that puts the environment, health, safety or wellbeing of Woodside employees or operations at risk will not be tolerated. Woodside respects people's rights to protest peacefully and lawfully but actions that put the environment, health, safety or wellbeing of Woodside employees or operations at risk go beyond those boundaries.

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Woodside accepts feedback and engages in consultation in order to achieve the aims set out in Section 5.2. Woodside recognises that there are persons and organisations that take a view that Woodside's operations and/or growth projects should be stopped or at least delayed as far as possible. Whilst Woodside assesses the merits of objections or claims received, it acknowledges NOPSEMA's guidance in its brochure entitled *Consultation on offshore petroleum environment plans information* for the community, which states that relevant persons are free to respond on any matter and raise any concern, however this may not be able to be considered if it is outside the scope or purpose of the EP and approval process, for example, statements of fundamental objection to offshore petroleum activities or information containing personal threats or profanities. Under regulation 34(g), there is no requirement for a relevant person to agree or confirm that they have been adequately consulted.

During consultation, relevant persons may seek to introduce other issues (such as agreements) that are not specific to EP consultation. While concepts of agreements may be associated with broader consultation processes, consultation for specific EPs can occur in parallel.

Feedback from relevant persons is reviewed and an assessment of the merits is made of information provided as well as objections or claims about the adverse impact of each activity to which the EP relates. This might, for instance, be done through a review of data and literature and for relevance to the nature and scale of the activity outlined in the EP. Consistent with the aim of consultation in Section 5.2, Woodside will consider information received when reviewing and designing measures to put in place to minimise harm to relevant persons and where reasonable or practical to further manage impacts and risks to ALARP and acceptable levels.

Woodside considers feedback during consultation from relevant persons and other persons Woodside chose to contact (see Section 5.3.4 and 5.3.7). This information is summarised in Appendix F, Table 1 and Table 2 of the EP and includes a statement of Woodside's response, or proposed response, if any, to each objection and claim.

In accordance with regulation 26(8), sensitive information (if any) in an EP, and the full text of any response by a relevant person to consultation under regulation 25, must be contained in the sensitive information part of the plan and not anywhere else in the plan.

5.7 Ongoing consultation

Consultation can continue to occur during the life of an EP, including after an EP has been accepted by NOPSEMA.

As per Woodside's ongoing consultation approach (refer to Section 7.12), feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP, including during its assessment and once accepted, in accordance with the intended outcome of consultation.

Should consultation feedback be received following the acceptance of an EP that identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Revision process as appropriate (see Section 7.10.1).

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6. ENVIRONMENTAL IMPACT AND RISK ASSESSMENT, PERFORMANCE OUTCOMES, STANDARDS AND MEASUREMENT CRITERIA

6.1 Overview

This section presents the impact and risk analysis and evaluation, EPOs, EPSs and MCs for the Petroleum Activity, using the methodology described in Section 2. Impacts and risks associated with the Petroleum Activity are summarised in Table 6-1 and evaluated throughout Section 6.

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Table 6-1: Environmental impact and risk analysis summary of planned and unplanned activities

Aspect	EP section	Risk rating				Acceptability of impact or risk
		Consequence /impact	Consequence/impact description	Likelihood	Risk rating	
Planned activities (routine and non-routine)						
Physical presence: interaction with other marine users	Section 6.7.1	F	Temporary localised impact not significant to areas or items of cultural significance.	-	-	Broadly Acceptable
Physical presence: disturbance to the seabed	Section 6.7.2	E	Slight and low-level impact on environmental feature(s) or area(s) of low significance.	-	-	Broadly Acceptable
Routine acoustic emissions: generations of noise during routine operations	Section 6.7.3	F	No lasting effect, localised impact not significant to environmental receptors	-	-	Broadly Acceptable
Routine and non-routine discharges: hydrocarbons and chemicals during subsea operations and activities	Section 6.7.4	F	No lasting effect, localised impact not significant to environmental receptors	-	-	Broadly Acceptable
Routine and non-routine discharges: produced water	Section 6.7.5	E	Slight and low-level impact on environmental feature(s) or area(s) of low significance.	-	-	Acceptable, if ALARP
Routine and non-routine discharges: utility systems, drains and support vessels	Section 6.7.6	Cumulative – E	Slight and low-level impact on environmental feature(s) or area(s) of low significance. Slight, short-term impact to a community or areas or items of cultural significance.	-	-	Broadly Acceptable
Routine and non-routine atmospheric (direct) and greenhouse gas emissions (direct and indirect)	Section 6.7.7	F	No lasting effect, localised impact not significant to environmental receptors Slight, short-term impact to a community or areas or items of cultural significance.	-	-	Acceptable, if ALARP
Routine and atmospheric emissions: indirect emissions associated with gas processing onshore	Section 6.7.8	F	No lasting effect, localised impact not significant to environmental receptors No attributable impact	-	-	Acceptable, if ALARP
Routine light emissions: light emissions from platform lighting, vessel operations and operational flaring	Section 6.7.9	F	No lasting effect, localised impact not significant to environmental receptors	-	-	Broadly Acceptable
Unplanned activities (accidents, incidents, emergency situations) – Major Environmental Events						
Unplanned hydrocarbon release: well loss of containment (MEE-01)	Section 6.8.3	B	Major impact on environmental features or areas, such as impact on feature or area of national importance with limited ability to recover. Major, long-term impact to a community, social infrastructure or highly valued areas or items of national cultural significance.	1	M	Acceptable, if ALARP
Unplanned hydrocarbon release: subsea equipment loss of containment (MEE-02)	Section 6.8.4	B	Major impact on environmental features or areas, such as impact on feature or area of national importance with limited ability to recover. Major, long-term impact to a community, social infrastructure or highly valued areas or items of national cultural significance.	1	M	Acceptable, if ALARP
Unplanned hydrocarbon release: topsides loss of containment (MEE-03)	Section 6.8.5	C	Moderate impact on environmental features or areas, such as impact on feature or area of heightened sensitivity with limited ability to recover. Moderate, medium-term impact to a community, social infrastructure of highly valued areas or items of national cultural significance.	1	M	Acceptable, if ALARP
Unplanned hydrocarbon release: loss of structural integrity (MEE-04)	Section 6.8.6	B	Major impact on environmental features or areas, such as impact on feature or area of national importance with limited ability to recover. Major, long-term impact to a community, social infrastructure or highly valued areas or items of national cultural significance.	1	M	Acceptable, if ALARP
Unplanned hydrocarbon release: loss of marine vessel separation (MEE-05)	Section 6.8.7	B	Major impact on environmental features or areas, such as impact on feature or area of national importance with limited ability to recover. Major, long-term impact to a community, social infrastructure or highly valued areas or items of national cultural significance.	1	M	Acceptable, if ALARP
	Section 6.8.8	C	Moderate impact on environmental features or areas, such as impact on feature or area of heightened sensitivity with limited ability to recover.	1	M	Acceptable, if ALARP

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Aspect	EP section	Risk rating				Acceptability of impact or risk
		Consequence /impact	Consequence/impact description	Likelihood	Risk rating	
Unplanned hydrocarbon release: loss of control of suspended load from GWA platform (MEE-06)			Moderate, medium-term impact to a community, social infrastructure of highly valued areas or items of national cultural significance.			
Unplanned activities (accidents, incidents, emergency situations)						
Unplanned hydrocarbon or chemical release: hydrocarbon release during bunkering/refuelling and chemical release during transfer, storage and use	Section 6.9.1	D	Minor impact on environmental features or areas such as impact on feature of low significance with some ability to recover.	2	M	Broadly Acceptable
Unplanned discharges: hazardous and non-hazardous waste management	Section 6.9.2	F	No lasting effect, localised impact not significant to environmental receptors	2	L	Broadly Acceptable
Physical presence: interactions with marine fauna	Section 6.9.3	F	No lasting effect, localised impact not significant to environmental receptors	1	L	Broadly Acceptable
Physical presence: introduction of invasive marine species	Section 6.9.4	E	Slight and low-level impact on environmental feature(s) or area(s) of low significance. Slight, short-term impact to a community or areas or items of cultural significance.	1	L	Broadly Acceptable

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6.2 Impact and risk analysis evaluation

As required by Regulations 21(5) and 21(6) of the Environment Regulations, the following analysis and evaluation demonstrates that the identified impacts and risks associated with the Petroleum Activity are reduced to ALARP and are of an acceptable level. This assessment considers all aspects of the activity, including normal operations and potential emergency conditions.

Impacts and risks identified during the ENVID workshops (including decision type, consequence and risk rating, and tools used to demonstrate acceptability and ALARP) have been categorised as either:

- planned (routine and non-routine) activities
- unplanned events (accidents, incidents or emergency situations).

Within each category, impacts and risks are further grouped by environmental aspect (e.g. physical presence, discharges and emissions).

For all hazardous events (i.e. unplanned events), a worst-case risk scenario has been assumed.

Impacts and risks related to Indigenous cultural features and heritage values are assessed in Section 6.11. Where appropriate, consideration of cultural heritage is also integrated into the assessment of planned activities and unplanned events, to demonstrate that impacts and risks are reduced to ALARP and are of an acceptable level.

The ENVID identified 9 impacts and 10 risks, including 6 MEEs, associated with the Petroleum Activity. Planned activities and unplanned events are summarised in Table 6-1. Assigned impact consequences and risk ratings were determined with controls in place, as described in Section 2.4.6**.**

The analysis and evaluation indicate that the impacts and risks are reduced to ALARP and are of an acceptable level, as discussed further in Section 6.7, Section 6.8 and Section 6.9**.**

The environmental impacts and risks for all aspects are summarised in Table 6-1.

6.3 Impacts and risks not deemed credible or outside the scope of this Environment Plan

During the ENVID, certain impacts and risks were identified and screened out where they were not relevant to the Petroleum Activity.

6.3.1 Shallow/near-shore activities

The Petroleum Activity is located in water depths of about 74 to 200 m deep, noting that water depths at Unnamed Shoal are about 40-50 m, and is about 38 km to the nearest landfall (Montebello Islands). Consequently, impacts and risks associated with shallow/near-shore activities such as vessel grounding were assessed as not credible.

6.4 Cumulative impacts

Woodside has assessed the cumulative impacts of the Petroleum Activity in relation to other relevant petroleum activities that may result in overlapping temporal and spatial extents. Nearby facilities include NRC, located at the eastern end of the IFL and the Wheatstone platform, approximately 18 km west of the Operational Area. Planned drilling and installation activities at GWF4 (assessed under the GWF-4 Drilling and Installation Environment Plan (NOPSEMA Doc ID A1327727)) may occur concurrently to the Petroleum Activity.

Given that the primary sources of environmental impacts associated with the Petroleum Activity are concentrated around the GWA platform, the potential for cumulative impacts is considered to be low. Cumulative impacts are considered for sources of impact where such impacts are assessed as credible. Where relevant, cumulative impacts of activities associated with undertaking multiple activities concurrently have been assessed and are discussed in the appropriate sections below (Section 6.7).

Three streams of liquid wastes are discharged to the marine environment in the Petroleum Activity:

- hydrocarbons and chemicals released from subsea operations, including well control at wellhead locations and IMMR activities, which occur intermittently throughout the Operational Area (Section 6.7.4)

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- PW discharged from the GWA platform at varying rates up to a maximum of 7,500 m^3/day (but typically lower), which disperses within a mixing zone of 1,200 m radius from the platform (Section 6.7.5)
- routine operational discharges of sewage, grey water, putrescible waste, deck, bilge and drain water, brine and cooling water from the GWA platform and/or support vessels, which are low-toxicity and relatively low-volume discharges (Section 6.7.6).

These discharges occur in deep waters and are expected to disperse rapidly, such that cumulative impacts (spatially or chemically) are unlikely.

6.5 Environmental performance outcomes, standards and measurement criteria

Regulation 21(7) of the Environment Regulations requires that an EP includes EPOs, EPSs and MCs to demonstrate that environmental impacts and risks of the activity will be managed to ALARP and to an acceptable level.

As defined in Regulation 5 of the Environment Regulations, an EPO for an activity, means a measurable level of performance required for the management of environmental aspects of the activity to ensure that environmental impacts and risks of the activity will be of an acceptable level.

The EPOs, EPSs and MC specified in this EP are consistent with legislative requirements and Woodside's standards and procedures. They have been developed based on the Codes and Standards, Good Industry Practice and Professional Judgement outlined in Section 2.4.5 and Section 2.4.6 as part of the acceptability and ALARP justification process.

The EPOs, EPSs and MC are presented throughout this section and in Appendix G (Oil Spill Preparedness and Response Mitigation Assessment). A breach of these EPOs or standards constitutes a 'Recordable Incident' under the Environment Regulations (refer to Section 7.13.4).

The GWA OPP identified the environmental impacts and risks associated with proposed developments and established the corresponding EPOs. The GWA OPP EPOs have been cascaded to the relevant aspects under this EP or, where appropriate, supplemented by new EPOs that provide the same or greater level of protection of the environment. The relationship between GWA OPP EPOs and the EPOs developed for this EP is summarised in Table 6-2.

For the physical and biological receptors within the EMBA, Woodside has set EPOs that are consistent with the Matters of National Environmental Significance – Significant impact guidelines 1.1 (DEWHA 2013). EPOs are set so that they are consistent with the principles of ESD as defined in Section 3A of the EPBC Act and demonstrated through the acceptability process (described in Section 2.6.2), which is applied to the aspects in Section 6. The EPOs for planned activities have been set at a level of environmental performance that considers the planned activities and associated level of environmental impact. This means that it can be demonstrated that changes which do not trigger EP resubmission as per MOC process (refer to Section 7.2.8) are able to be managed to the Acceptable level.

For socio-economic receptors, including fishing and other commercial activities, the EPOs that have been set reflect the requirements in the Section 280(2) of the OPGGS Act, in that the activities undertaken as a part of the development of the Petroleum Activity should not interfere with other marine users, to a greater extent than is necessary for the exercise of right conferred by the titles granted.

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Table 6-2: Comparison of Goodwyn Area Infill Development OPP and Goodwyn Alpha Facility Operations EP EPOs as applicable to relevant wells

Aspect	EPO(s) in this EP	Relevant EPO(s) from the GWA OPP	Comparison
Planned Activities			
Physical presence: interaction with other marine users	EPO 1 Impacts to relevant marine users from the Petroleum Activity planned activities will be limited through the provision of appropriate information / notification.	EPO-01 No interference with other marine users to a greater extent than is necessary for the exercise of rights and performance of duties as conferred to the titleholder	The EP EPO 1, to limit impacts to planned activities through provision of appropriate information, is aligned with the notion of not interfering with other marine users beyond the extent necessary to exercise rights conferred by the title(s) granted and therefore aligns with the intention of OPP EPO-01 concerning interaction with other marine users.
Physical presence: disturbance to the Seabed	EPO 2 Seabed disturbance to be limited to planned activities and impacts described as part of the Petroleum Activity and to not occur outside the Operational Area.	EPO-04 No long-term adverse effects to the values of Australian Marine Parks from the petroleum activity.	The EP EPO 2 is aligned with OPP EPO-04 as there is no infrastructure within the Montebello Marine Park and by limiting seabed disturbance to planned activities and impacts, as described in Section 6.7.2 no long-term impacts are expected.
	EPO 3 No adverse impact[12] to unexpected finds of Underwater Cultural Heritage[13] without a permit[14].	EPO-27: Prevent adverse changes to UCH (as protected under the UCH Act [Cth]), or to declared areas or objects of particular significance (as protected under the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 [Cth]) from the petroleum activity.	The EP EPO 3 aligns with OPP EPO-27 as both seek to prevent adverse impacts to Underwater Cultural Heritage arising from petroleum activities.
Routine acoustic emissions: generations of noise during routine operations	EPO 4a No injury of, or mortality to, EPBC Act 1999 listed marine fauna as a result of noise generated by the Petroleum Activity. EPO 4b No displacement of marine turtles from habitat critical during nesting/breeding (incl internesting	EPO-04 No long-term adverse effects to the values of Australian Marine Parks from the petroleum activity. EPO-06: The petroleum activity will not be undertaken in a manner that is inconsistent with any threatened species or community	EP EPO 4a aligns with OPP EPO-07 while EP EPO 4b aligns with OPP EPO-06. EP EPO 4a and 4b provide broader protection of EPBC-listed marine fauna, habitat critical to survival and biologically important areas from noise impacts which supports the protection of

[12] Adverse impacts to UCH without a permit are defined under the Underwater Cultural Heritage Act 201, subsection 30(2).

[13] Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act

[14] Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

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Aspect	EPO(s) in this EP	Relevant EPO(s) from the GWA OPP	Comparison
	periods for turtles) and ensure biologically important behaviour can continue in biologically important areas.	recovery plan, or Threat Abatement Plan, as made or adopted under the EPBC Act. EPO-07: Planned noise-generating activities of Goodwyn Area Infill Development are managed in such a manner to prevent auditory injury[15] and temporary threshold shift.	Australian Marine Park values and align with the intent of OPP EPO-04.
Routine and non-routine discharges: hydrocarbons and chemicals during subsea operations and activities	EPO 5 Routine and non-routine discharges from subsea operations and IMMR activities are limited to those described for the Petroleum Activity.	EPO-04 No long-term adverse effects to the values of Australian Marine Parks from the petroleum activity. EPO-13 No adverse effects greater than temporary changes to water quality, with no lasting effect (return to natural levels within 3 days[16]) to water quality from routine and non-routine hydrocarbon and chemical discharges during the petroleum activity.	The EP EPO aligns with the OPP EPO-04 and EPO-13 by limiting the activities and impacts to those described which has demonstrated no long-term adverse effects to the values of the Montebello Marine Park and that changes to water quality from operations of the relevant OPP wells, will have no lasting effect.
Routine and non-routine discharges; produced water	EPO 6 No impact to the environment outside the Approved Mixing Zone from planned discharges of produced water.	EPO-19: No impact to ecosystem integrity from produced water outside the Approved Mixing Zone boundary.	The EP EPO provides a higher level of protection than the OPP EPO-19 due to requirement for no impact to the environment rather than the ecosystem integrity set in the OPP.
Routine and non-routine discharges: utility systems, drains and support vessels	EPO 7 Impacts from routine and non-routine discharges of liquid waste will be limited to planned activities and impacts described as part of the Petroleum Activity.	EPO-04 No long-term adverse effects to the values of Australian Marine Parks from the petroleum activity. EPO-14: No adverse effects greater than temporary changes to water quality and biological communities, while vessels/MODU are within the Project Area, with no lasting effect from routine and non-routine MODU/vessel discharges.	The EP EPO aligns with the OPP EPO-04 and EPO-14 by limiting the activities and impacts to those demonstrated to have no long term adverse effects to the values of the Montebello Marine Park and that changes to water quality, from a vessel undertaking IMMR activities at the relevant OPP wells to have no lasting effect.

[15] Previously PTS in Southall et al. (2019)

[16] A conservative duration has been applied based on study which demonstrated that the maximum time for concentrations to fall below threshold concentrations, for a large dewatering volume, was ~3 days (Scarborough Seabed Intervention and Trunkline Installation Environment Plan).

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Aspect	EPO(s) in this EP	Relevant EPO(s) from the GWA OPP	Comparison
Routine and non-routine atmospheric (direct) and greenhouse gas emissions (direct and indirect)	EPO 8a GWA facility GHG emissions shall assist in NWS Project Facility achieving GHG reductions under reformed Safeguard Mechanism (inclusive of legislated net zero emissions by 2050). EPO 8b Air quality from direct atmospheric emissions will be limited to planned impacts and activities described as part of the Petroleum Activity. EPO 8c Minimise GHG emissions from support vessels through efficient fuel usage and consideration of fuel types utilised[17]. EPO 9 Woodside will support customers to reduce their GHG emissions.	EPO-08: No adverse effects greater than temporary changes in air quality while vessels/MODU are within the Project Area, with no lasting effect from atmospheric emissions. EPO-09: Minimise GHG emissions from vessels through efficient fuel usage and consideration of fuel types utilised[18]. EPO-10: Net GHG emissions associated with offshore and onshore processing will achieve reduction requirements under the reformed Safeguard Mechanism (inclusive of legislated net zero emissions by 2050). EPO-11: Woodside will support customers to reduce their GHG emissions. EPO-12: Estimated GHG emissions associated with Goodwyn Area Infill Development will not materially or substantially contribute to global GHG emissions levels.	EP EPO 8a and OPP EPO-10 are effectively equivalent, as both outcomes require GHG emissions associated with processing activities to contribute to achievement of Safeguard Mechanism reduction requirements and legislated net zero objectives. EP EPO 8b and OPP EPO-08 align by seeking to ensure atmospheric emissions remain within the impacts assessed for the activity. The EP EPO is broader because it applies to all operational atmospheric emission sources associated with the operating GWA Facility, whereas the OPP is primarily focused on atmospheric emissions from development-phase vessels, MODUs and associated activities. EP EPO 8c and OPP EPO-09 aligns directly as both seek to minimise GHG emissions from support vessel operations through fuel efficiency and fuel selection measures. EP EPO 9 and OPP EPO-11 align directly, and both seek to support customers to reduce their GHG emissions. OPP EPO-12 is inherent in the activity as described in Section 6.7.7 and is therefore met through this EP.
Routine and atmospheric emissions: indirect emissions associated with gas processing onshore	EPO 10 Prevent accelerated weathering of Murujuga rock art or impact to human health from air emissions that result from onshore processing of GWA gas.	EPO-28: Prevent accelerated weathering of Murujuga rock art from air emissions that result from onshore processing of Goodwyn Area Infill Development gas.	There is no change to the EPO in the EP.

[17] Other upstream indirect emissions such as those associated with helicopter travel and suppliers are not considered material.

[18] Other upstream indirect emissions such as those associated with helicopter travel and suppliers are not considered material.

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Aspect	EPO(s) in this EP	Relevant EPO(s) from the GWA OPP	Comparison
	EPO 11a No adverse impacts[19] to cultural features and heritage values from the Petroleum Activity EPO 11b Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural features and heritage values.	EPO-29: Woodside will support First Nations capacity for ongoing engagement and consultation on EPs for the purpose of avoiding impacts to cultural features and heritage values.	EP EPO 11a is a new EPO. EP EPO 11b and OPP EPO-29 are effectively equivalent.
Routine light emissions from platform, support vessel and flaring	EPO 12 No impacts to marine fauna greater than that caused by minimum required light emissions for safe work and navigation.	EPO-04 No long-term adverse effects to the values of Australian Marine Parks from the petroleum activity. EPO-05: No adverse effects greater than a change to behaviour, with no lasting effect to marine fauna from artificial light emissions during the petroleum activity. EPO-06: The petroleum activity will not be undertaken in a manner that is inconsistent with any threatened species or community recovery plan, or Threat Abatement Plan, as made or adopted under the EPBC Act.	The EP EPO 12 aligns with the OPP EPO-04, EPO-05 and EPO-06 as the impact assessment has demonstrated that the light emissions required for safe work and navigation do not adversely affect the values of the Montebello Marine Park, result in impacts greater than a change to behaviour, or are inconsistent with recovery plans. Therefore, the implementation of EP EPO 12 meets or is better than the level of performance in OPP EPO-04, EPO-05 and EPO-06.
Unplanned Activities			
Unplanned hydrocarbon release: well loss of containment (MEE-01)	EPO 13 No release of hydrocarbons to the marine environment due to well loss of containment.	EPO-25: No unplanned release of hydrocarbons to the marine environment due to a loss of well integrity or due to a flowline loss of containment.	The EP EPO-13 is directly aligned with OPP EPO-25. Both outcomes seek to prevent hydrocarbon releases to the marine environment resulting from loss of well integrity.
Unplanned hydrocarbon release: subsea equipment loss of containment (MEE-02)	EPO 14	EPO-25: No unplanned release of hydrocarbons to the marine environment due to a loss of well integrity or due to a flowline loss of containment.	The EP EPO-14 is directly aligned with OPP EPO-25, which specifically requires prevention of unplanned hydrocarbon releases resulting from flowline loss of containment. As flowlines

[19] *For the purposes of the Petroleum Activity, an adverse impact to cultural features or heritage values is considered to occur where there is: direct physical disturbance causing observable damage to a site or object of cultural significance; a measurable and significant decline in the population or habitat of a culturally significant species attributable to the activity; or a substantiated impact on recognised intangible cultural values.*

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Aspect	EPO(s) in this EP	Relevant EPO(s) from the GWA OPP	Comparison
	No release of hydrocarbons to the marine environment due to loss of containment from subsea equipment.		form part of the subsea equipment associated with the development, EPO-25 addresses the same environmental outcome sought by the EPO-14.
Unplanned hydrocarbon release: topsides loss of containment (MEE-03)	EPO 15 No release of hydrocarbons to the marine environment due to a topsides loss of containment.	Not applicable as the GWA Facility was outside the scope of the Goodwyn Area Infill Development OPP	
Unplanned hydrocarbon release: loss of structural integrity (MEE-04)	EPO 16 No release of hydrocarbons to the marine environment from loss of structural integrity.	Not applicable as the GWA Facility was outside the scope of the Goodwyn Area Infill Development OPP	
Unplanned hydrocarbon release: loss of marine vessel separation (MEE-05)	EPO 17 No release of hydrocarbons to the marine environment due to loss of marine vessel separation associated with the Petroleum Activity.	Not applicable as the GWA Facility was outside the scope of the Goodwyn Area Infill Development OPP	
Unplanned hydrocarbon release: loss of control of suspended load from GWA platform (MEE-06)	EPO 18 No release of hydrocarbons to the marine environment due to loss of control of suspended load from platform associated with the Petroleum Activity	Not applicable as the GWA Facility was outside the scope of the Goodwyn Area Infill Development OPP	
Unplanned hydrocarbon or chemical release: hydrocarbon release during bunkering/ refuelling and chemical release during transfer, storage and use	EPO 20 No unplanned release of hydrocarbons or chemicals to the marine environment.	EPO-24: No unplanned release of hydrocarbons or chemicals to the marine environment.	The EP EPO-20 is directly aligned with OPP EPO-24 (noting the OPP EPO only relates to vessel based activities as the GWA Facility was outside the scope of the Goodwyn Area Infill Development OPP)
Unplanned discharges: hazardous and non-hazardous waste management	EPO 21 No unplanned release of solid hazardous or non-hazardous waste[15] to the marine environment.	EPO-23: No unplanned release of solid hazardous or non-hazardous waste[20] to the marine environment.	The EP EPO-21 is directly aligned with OPP EPO-23 (noting the OPP EPO only relates to vessel based activities as the GWA Facility was outside the scope of the Goodwyn Area Infill Development OPP)

[20] *Waste as defined in the Woodside Offshore Facilities Waste Management Plan*

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Aspect	EPO(s) in this EP	Relevant EPO(s) from the GWA OPP	Comparison
Physical presence: interactions with marine fauna	EPO 22 No injury of, or mortality to, EPBC Act 1999 and listed marine fauna as a result of the Petroleum Activity.	EPO-20: Prevent injury or mortality to EPBC listed marine species and seabirds as a result of the petroleum activities.	The EP EPO 22 directly aligns with OPP EPO-20, to prevent injury or mortality to EPBC-listed marine fauna arising from the Petroleum Activity.
Physical presence: introduction of invasive marine species	EPO 23 No introduction of IMS into the Operational Area as a result of the Petroleum Activity.	EPO-21: No introduction and establishment of an IMS into the Project Area as a result of the petroleum activity.	The EP EPO 23 provides a higher level of protection than the OPP EPO-21 due the EP EPO preventing any IMS establishment.

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6.6 Presentation

The environmental impact and risk analysis and evaluation, demonstration of ALARP and acceptability, EPOs, EPSs and MCs are presented in tabular form throughout Section 6, as shown in the example below. Italicised text in this example table denotes the purpose of each part of the table, with reference to the relevant sections of the Regulations and/or this EP.

<table>
<tr><th colspan="14">Context
Description of the context for the impact/risk. Regulation 21(1), 21(2) and 21(3)</th></tr>
<tr><td colspan="4">Description of the Activity – Regulation 21(1)</td><td colspan="4">Description of the Environment – Regulations 21(2)(3)</td><td colspan="6">Consultation – Regulation 25 and 24(b)</td></tr>
<tr><th colspan="14">Impact or risk evaluation summary
Summary of ENVID outcomes</th></tr>
<tr><td rowspan="2">Source of impact or risk
Regulation 21(1)</td><td colspan="6">Environmental value(s) potentially impacted
Regulations 21(2)(3)</td><td colspan="7">Evaluation
Regulations 21(5)(6)</td></tr>
<tr><td>Marine sediment</td><td>Water quality</td><td>Air quality (incl odour)</td><td>Ecosystems/ habitat</td><td>Species</td><td>Socio-economic</td><td>Decision type</td><td>Consequence/ impact</td><td>Likelihood</td><td>Risk rating</td><td>ALARP tools</td><td>Acceptability</td><td>Outcome</td></tr>
<tr><td>Summary of source of impact or risk</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><th colspan="14">Description of source of impact or risk</th></tr>
<tr><td colspan="14">Description of the sources of identified impacts or risks. Regulation 21(1).</td></tr>
<tr><th colspan="14">Impact or risk assessment</th></tr>
<tr><td colspan="14">Environmental value(s) impacted or at risk</td></tr>
<tr><td colspan="14">Discussion and assessment of the impacts and risks to the identified environment value(s) in accordance with Regulation 21(5) and 21(6).
Description of impacts and risks to environmental values aligned to Woodside impacts and risk classifications (Section 2.4.6).</td></tr>
</table>

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[21]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
ALARP/hierarchy of control tools used – Section 2.4.5				
Summary of control considered to ensure the impacts and risks are continuously reduced to ALARP. Regulation 21(5)(c).	Technical/logistical feasibility of the control. Cost/sacrifice required to implement the control (qualitative measure).	Qualitative commentary of impact/risk that could be averted/ environmental benefit gained if the cost/ sacrifice is made and the control is adopted.	Proportionality of cost/sacrifice vs environmental benefit. If proportionate (benefits outweigh costs), the control will be adopted. If	If control is adopted, reference to Control No. provided.

[21] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[21]***	***Benefit in impact/risk reduction***	***Proportionality***	***Control adopted***
			disproportionate (costs outweigh benefits), the control will not be adopted.	
ALARP statement: Made on the basis of the environmental impact or risk assessment outcomes, use of relevant tools appropriate to the decision type (Section 2.4.4.2) and a proportionality assessment in accordance with Regulation 34(b).				

Demonstration of acceptability
Acceptability statement: Made on the basis of applying the process described in Section 2.6 in accordance with Regulation 34(c)

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO No. S: Specific performance that addresses the legislative and other controls that manage the activity, and against which performance by Woodside in protecting the environment will be measured. M: Performance against the outcome will be measured through implementation of the controls via the MC. A: Achievability/feasibility of the outcome demonstrated via discussion of feasibility of controls in ALARP demonstration. Controls are directly linked to the outcome. R: The outcome will be relevant to the source of risk/impact and the potentially impacted environmental value[22] T: The outcome will state the timeframe during which the outcome will apply or	C No. Identified control adopted to ensure that the impacts and risks are continuously reduced to ALARP. Regulation 21(5) (c).	PS No. Statement of the performance required of a control measure. Regulation 21(7)(a).	MC No. Measurement criteria for determining whether the outcomes and standards have been met. Regulation 21(7)(c).

[22] *Where impact/consequence descriptors are presented within EPOs the descriptors are aligned with the definitions provided in the Woodside Risk Matrix (refer Section 2).*

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
by which it will be achieved.			

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6.7 Planned activities (routine and non-routine)

6.7.1 Physical presence: interaction with other marine users

Context		
Facility layout and description – Section 3.5 Support vessel operations – Section 3.8 Subsea inspection, monitoring, maintenance, and repair activities – Section 3.7	Socio-economic environment – Section 4.10	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Presence of GWA platform and subsea infrastructure.						✓	A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 1
Exclusion of other users from the PSZ and SEZ.						✓							
Presence of support vessels undertaking routine activities including IMMR within the Operational Area.						✓							

Description of source of impact

The GWA platform commenced operation in 1995 and has been marked on nautical charts since that time. The platform is surrounded by a 500 m radius PSZ, measured from each point of the outer edge of the structure, within which unauthorised vessels are prohibited. The PSZ is a critical safety control that reduces the likelihood of vessels-platform interactions. Implementation of the PSZ restricts access to a small area of the sea (approximately 0.79 km^2).

The platform is clearly visible under most conditions and is fitted with lighting in accordance with navigational requirements. Its physical structure provides a strong radar return, enabling detection by vessels equipped with marine radar systems.

Routine vessel activities associated with the Petroleum Activity are primarily concentrated within the PSZ and include both continuous standby support and routine supply operations. A dedicated standby vessel is present at the GWA platform on a continuous basis, with coverage maintained through vessel rotations (typically in two-week periods). In addition, PSV visits to support routine cargo operations typically occur on a weekly basis with total presence in the Operational Area usually less than 24 hours per visit.

Subsea support vessels and HLVs may undertake activities within the Operational Area at any time, including outside the PSZ. These activities are typically undertaken as discrete campaigns (e.g. IMMR activities or removal of redundant equipment), with durations generally ranging from approximately two weeks to one month per campaign, depending on the nature and complexity of the work.

An ASV may be deployed to support extended maintenance campaigns, shutdowns or major projects and would also be surrounded by 500 m Safety Exclusion Zone (SEZ). During such campaigns, the ASV may be located adjacent to the platform within the PSZ and operate continuously (24 hours per day). ASV use is expected to be infrequent, with up to one campaign within the EP period (5 years), typically of up to three months' duration.

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Subsea infrastructure associated with operations may also present a potential for interactions with other marine users. The Australian Hydrographic Office (AHO) has been notified of the location of all existing subsea infrastructure, including infrastructure maintained for decommissioning, for inclusion on nautical charts. Water depths of subsea infrastructure range between approximately 74 and 200 m.

Impact assessment

Environmental value(s) potentially impacted

Exclusion and displacement of other users

Interaction between the Petroleum Activity and other marine users may result in temporary and localised changes to their functions, interests or activities while vessel-based activities are underway.

The duration and extent of potential for interaction will depend on the activity undertaken, and is outlined below:

- **GWA facility operations** - ongoing, for the duration of the Petroleum Activity and primarily limited to the PSZ surrounding the platform and the SEZ surrounding the ASV (if deployed). The PSZ and SEZ exclude unauthorised vessels from a 500 m radius around the platform and ASV, respectively. A dedicated standby vessel (typically present in two-week periods) and a PSV to support routine supply operations (weekly visits for up to 24 hours) may be present concurrently within the PSZ.
- **subsea support operations (IMMR)** – activities are undertaken intermittently, with frequency varying depending on operational requirements (Table 3-6 and Table 3-7). IMMR activities are typically conducted as discrete campaigns, with durations generally ranging from approximately two weeks to one month per activity. These activities may occur within the PSZ and SEZ or more broadly within the Operational Area.

Commercial fishing

The Operational Area overlaps three Commonwealth fisheries and 13 State managed commercial fisheries management areas (Section 4.10.1). Historical fisheries effort data was assessed to evaluate the actual fishing effort of fisheries within management areas that overlap the Operational Area. The assessment indicated that no Commonwealth managed fisheries have potential for interaction with the Operational Area. Seven State managed fisheries were identified as having a potential interaction with the Petroleum Activity within the Operational Area (Table 4-24). The likely interaction and presence of commercial fishing vessels was assessed based on fisheries management plan areas, catch-effort methodologies, historical effort and consultation (Section 4.10.1).

Commercial fishing vessels in the vicinity of the Operational Area are most likely to be licenced under the Mackerel Managed Fishery, and the Pilbara Demersal Scalefish Fishery (PDSF).

The mackerel fishery primarily uses near-surface trolling gear and also jig fishing from vessels in coastal areas around reefs, shoals and headlands to target Spanish mackerel.

The PDSF includes the Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF), the Pilbara Trap Managed Fishery (PTMF) and the Pilbara Line Fishery (PLF). The PDSF uses a combination of limited entry, effort allocations (time), gear limits, plus spatial zones (including extensive trawl closures) as management measures. A small area of the Operational Area lies within Zone 2 – Area 6 of the PFTIMF, as designated Pilbara offshore closed waters, an area closed to trawling since 1997. Trawl fishing may occur from fisheries in the PDSF. Therefore, the presence of subsea infrastructure could present a risk of equipment entanglement and subsequent equipment damage or loss. However, such interactions are expected to be infrequent and localised.

While interactions with the Specimen Shell Managed Fishery, Marine Aquarium Fish Managed Fishery and Onslow Prawn Managed Fishery are possible within the Operational Area based on 60 nm CAES activity, consideration of the fisheries' collection methods and operating depths indicates interactions are unlikely.

As such, impacts from the physical presence of the GWA platform, subsea support vessel activity and subsea infrastructure on these fisheries are expected to be temporary and localised.

Tourism and recreation

Tourism and recreation activity in the Operational Area is expected to be infrequent, with recreational and charter fishing from vessels the only tourism and recreation activities identified as potentially occurring in the Operational Area. Fishing tours operate across WA State waters and report monthly logbook records of client catch. Recreational and charter fishing activities are typically undertaken using hook and line methods. The GWA platform is ~138 km north-west of Dampier.

There are three shoals within or close to the Operational Area that are relatively shallow and may support some recreational fishing:

- Unnamed Shoal – water depths of between 40 and 50 m, located within the Operational Area
- Wilcox Shoal – water depths of 25 to 80 m, located 2.4 km from the Operational Area.
- Rankin Bank – water depths of ~18–30.5 m, located 3.7 km from the Operational Area

During consultation, Recfishwest confirmed that due to the activities' proximity to the Montebello Islands, the Montebello Marine Park, and Rankin Bank, charter vessels and larger recreational vessels may still access the general area (Section 5 and Appendix F).

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However, given the distance from boating facilities, proximity to an operating petroleum facility and the water depth of the Operational Area, very little recreational or charter fishing is expected to occur within the Operational Area. As such, impacts to recreational and charter fishing are expected to be temporary and localised.

Shipping

Significant commercial shipping occurs in the region, with a commercial shipping lane passing through the Operational Area. Commercial vessels in the area comprise the following:

- bulk carriers (e.g. mineral ore, salt etc.) from Port Hedland, Dampier and Cape Preston
- offtake tankers
- support vessels for offshore oil and gas activities
- LNG carriers from Dampier, Barrow Island and Ashburton North.

To reduce the likelihood of interactions between commercial vessels and offshore facilities, AMSA has introduced a network of shipping fairways within which commercial vessels are advised to navigate (Figure 4-20). The fairways are not mandatory; however, AMSA strongly recommends commercial vessels remain within fairways when transiting the region. The use of shipping fairways is good seafaring practice, with MASTREP (Modernised Australian Ship Tracking and Reporting System) data from AMSA indicating cargo ships and tankers routinely navigate within the established fairways.

The fairway intended to direct north- and south-bound vessel traffic from Barrow Island and the southern Montebello Islands overlaps the Operational Area west of the GWA platform. Operational history of the GWA platform indicates that commercial vessels rarely enter the PSZ.

The presence of the GWA platform, support vessels and subsea infrastructure are not expected to result in impacts to commercial shipping beyond localised exclusion of shipping traffic from the PSZ and the temporary displacement in the wider Operational Area of commercial shipping due to the presence of support vessels undertaking activities.

Oil and gas

The NRC is the nearest oil and gas platform to the GWA platform, and they are connected by the IFL. NRC is operated by Woodside and any impacts from the Petroleum Activity on NRC will not affect third parties.

The nearest facility not operated by Woodside is the Chevron-operated Wheatstone platform, which is located approximately 18 km west of the Operational Area.

Given the distance between the Operational Area and petroleum activities undertaken by other operators, no impacts to other operators are expected to occur as a result of the presence of the GWA platform, subsea infrastructure or support vessels.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[23]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Order 21 (Safety of navigation and emergency procedures) 2016 • Marine Order 27 (Safety of navigation and radio equipment) 2016 • Marine Order 30 (Prevention of Collisions) 2016.	F: Yes. CS: Minimal cost. Standard practice.	Compliance with Marine Orders ensures vessels are operated in accordance with established navigational safety requirements, thereby reducing the likelihood of vessel–vessel and vessel–platform collisions.	Legislative requirement – must be adopted.	Yes **C 1.1**

[23] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[23]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Implementation of a 500 m PSZ around the GWA platform	F: Yes. CS: Minimal cost. Standard practice.	The PSZ restricts access of third-party vessels in close proximity to the platform, thereby reducing the likelihood of vessel–platform collisions and associated safety and environmental risks.	Legislative requirement – must be adopted	Yes **C 1.2**
Establishment of a 500 m SEZ around ASV and communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Establishment of a 500 m SEZ around the ASV reduces the likelihood of interaction with other marine users.	Legislative requirement – must be adopted.	Yes **C 1.3**
Good practice				
Notify the Australian Hydrographic Office (AHO) of the location of permanent infrastructure to enable update of nautical charts.	F: Yes. CS: Minimal cost. Standard practice.	Updating nautical charts ensures marine users are aware of infrastructure locations, reducing the likelihood of unplanned vessel–infrastructure interactions.	Benefits outweigh cost/ sacrifice. Standard industry practice.	Yes **C 1.4**
Undertake consultation in support of the Petroleum Activity to inform marine users of planned activities.	F: Yes. CS: Minimal cost. Standard practice.	Consultation ensures marine users are informed and aware, thereby reducing the likelihood of unplanned interactions within the Operational Area.	Benefits outweigh cost/ sacrifice. Standard industry practice.	Yes **C 1.5**
Notify AHO of activities no less than four working weeks prior to scheduled activity commencement date, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	F: Yes. CS: Minimal cost. Standard practice.	Notification enables dissemination of maritime safety information (e.g. MSIN, Notices to Mariners), improving awareness of vessel activities and reducing the likelihood of vessel interaction within the Operational Area.	Benefits outweigh cost/ sacrifice. Standard industry practice.	Yes **C 1.6**
Notify AMSA Joint Rescue Coordination Centre (JRCC) 72 to 96 hours before activities, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	F: Yes. CS: Minimal cost. Standard practice.	Notification to JRCC ensures awareness of prolonged vessel activity outside the PSZ, supporting maritime safety coordination and reducing the likelihood of unplanned vessel interactions.	Benefits outweigh cost/ sacrifice. Standard industry practice.	Yes **C 1.7**
Notify JRCC 72 to 96 hours prior to IMMR activities in, or within 1	F: Yes.	Notification of vessel activities where the vessel will be	Benefits outweigh cost/ sacrifice.	Yes **C 1.8**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[23]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
km of, shipping lanes, where the vessel undertaking the activities will be connected to the seabed.	CS: Minimal cost. Standard practice.	connected to the seabed in or near shipping lanes improves awareness for passing commercial vessels, reducing the likelihood of vessel–vessel interaction within established shipping routes.	Standard industry practice.	
Notify WAFIC, Recfishwest, AFMA, DPIRD, DAFF – Fisheries and CFA no less than 10 days prior to commencement and following completion of the activities, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone, >3 weeks.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/ sacrifice.	Yes **C 1.9**
Notify the DNP upon EP approval, and at least 10 days prior to activities occurring in the Montebello AMP – Multiple Use Zone (excluding transiting), and after activities are complete.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activity to other marine users ensures they are informed and aware, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/ sacrifice.	Yes **C 1.10**
Professional judgement – eliminate				
Reduce the PSZ	F: No. The PSZ is mandated by the OPGGS Act and is a safety and environment critical element; it cannot be reduced. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional judgement – substitute				
None identified.				
Professional judgement – engineered solution				
Implementation of platform collision prevention systems.	F: Yes. CS: Minimal cost. Standard practice.	Collision prevention systems improve vessel detection and awareness of the platform, reducing the likelihood of vessel–platform collision.	Corporate (WMS) requirement – must be adopted.	Yes **C 1.11**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[23]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Over-trawl protection on subsea infrastructure.	F: Yes. CS: Significant cost associated with design and installation across extensive subsea infrastructure.	Over-trawl protection would reduce the potential for fishing gear interaction with subsea infrastructure.	The cost of implementation is considered grossly disproportionate to the marginal reduction in risk. Control not adopted	No
ALARP statement: On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), the adopted controls are considered appropriate to manage the potential impacts of the physical presence of the GWA platform, subsea infrastructure and vessels on other users. As no reasonably practicable additional or alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, the physical presence of the GWA platform, subsea infrastructure and subsea support vessels may result in temporary and localised impacts to commercial fishing, recreational fishing and shipping within a limited area. Consultation with relevant persons has identified shipping traffic and vessel movements in, or in close proximity to, the Operational Area but has not indicated any objections in relation to interaction with other marine users. On the basis of the assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), the adopted controls are considered appropriate to manage impacts to a level that is broadly acceptable. Compliance with these controls demonstrates that the EPO is met.

EPOs, EPSs and MC			
EPO	***Controls***	***EPS***	***MC***
EPO 1 Impacts to relevant marine users from the Petroleum Activity planned activities will be limited through the provision of appropriate information / notification.	**C 1.1** Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Orders 21 (Safety of navigation and emergency procedures) 2016 • Marine Order 27 (Safety of navigation and radio equipment) 2016 • Marine Orders 30 (Prevention of Collisions) 2016.	**PS 1.1** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class.	**MC 1.1.1** Marine verification records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).
	C 1.2 Implementation of a 500 m PSZ around the GWA platform.	**PS 1.2** PSZ maintained and monitored for incursions where practicable.	**MC 1.2.1** Records of adverse interactions in the PSZ are recorded.

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EPOs, EPSs and MC			
EPO	***Controls***	***EPS***	***MC***
	C 1.3 Establishment of a 500 m SEZ around ASV and communicated to marine users.	**PS 1.3** No entry of unauthorised vessels within the 500 m SEZ.	**MC 1.3.1** Daily Operations Reports and incident records demonstrate beaches by unauthorised vessels within the SEZ.
	C 1.4 Notify AHO of the location of permanent infrastructure to enable update of nautical charts.	**PS 1.4** Woodside will notify AHO of location of permanent infrastructure.	**MC 1.4.1** Records demonstrate AHO has been notified of location of permanent infrastructure.
	C 1.5 Undertake consultation in support of the Petroleum Activity to inform marine users of planned activities.	**PS 1.5** Implement a consultation process that conforms to the requirements of the Environment Regulations.	**MC 1.5.1** Records demonstrate a consultation program that conforms to the requirements of the Environment Regulations has been undertaken (refer to Section 5).
	C 1.6 Notify AHO of activities no less than four working weeks prior to scheduled activity commencement date, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	**PS 1.6** Woodside to notify AHO of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	**MC 1.6.1** Records demonstrate that AHO notifications are completed.
	C 1.7 Notify JRCC 72 to 96 hours prior to activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	**PS 1.7** JRCC is notified prior to activities in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks, for awareness should emergency response be required.	**MC 1.7.1** Records demonstrate the JRCC was notified.
	C 1.8 Notify JRCC 72 to 96 hours prior to IMMR activities in, or within 1 km of, shipping lanes, where the vessel undertaking the activities will be connected to the seabed.	**PS 1.8** JRCC is notified prior to IMMR activities in, or within 1 km of, shipping lanes where the vessel will be connected to the seabed.	**MC 1.8.1** Records demonstrate the JRCC was notified.
	C 1.9 Notify WAFIC, Recfishwest, AFMA, DPIRD, DAFF – Fisheries and CFA no less than 10 days prior to commencement and following completion of activities, where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	**PS 1.9** Woodside to notify WAFIC, Recfishwest, AFMA, DPIRD, DAFF – Fisheries and CFA no less than 10 days prior to commencement and following completion of activities where vessels will be undertaking activities in the Operational Area, but	**MC 1.9.1** Records demonstrate that WAFIC, Recfishwest, AFMA, DPIRD, DAFF – Fisheries and CFA notifications are completed.

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EPOs, EPSs and MC			
EPO	***Controls***	***EPS***	***MC***
		outside of the Petroleum Safety Zone >3 weeks.	
	C 1.10 Notify the DNP upon EP acceptance, and at least 10 days prior to activities occurring in the Montebello AMP – Multiple Use Zone (excluding transiting), and after activities are complete.	**PS 1.10** Notification to the DNP upon EP acceptance and 10 days before entering the Montebello AMP – Multiple Use Zone, and following completion of the activities.	**MC 1.10.1** Notification records demonstrate the DNP was notified.
	C 1.11 Implementation of platform collision prevention systems.	**PS 1.11** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P34 Collision Prevention Systems to: o alert facility of a potential collision with marine vessels; and o alert marine vessels of facility location so that they may take timely action to avoid the facility and hence reduce likelihood of a collision.	**MC 1.11.1** Records demonstrate implementation of SCE Technical Performance Standard(s) and Management of Hardware Controls in the Operate Phase Procedure (Section 7.2.9).

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6.7.2 Physical presence: disturbance to the seabed

Context		
Facility layout and description – Section 3.5 Subsea inspection, monitoring, maintenance and repair activities – Section 3.7 Support vessel operations – Section 3.8	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Key ecological features – Section 4.7 Protected places – Section 4.8	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Presence of GWA platform and subsea infrastructure	✓	✓		✓		✓	A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO 2 EPO 3
Subsea operations and IMMR activities	✓	✓		✓		✓							
Presence of redundant infrastructure remaining infield until EOFL	✓	✓		✓		✓							

Description of source of impact

Seabed disturbance associated with the Petroleum Activity may occur during operations, including as a result of:

- physical presence of the GWA platform and subsea infrastructure (operational and redundant), including scour, spans and flowline movement inherent to design
- subsea IMMR activities (Section 3.7).

Physical presence

The physical presence of the GWA platform and subsea infrastructure (operational and redundant) provides hard substrate habitats from the sea surface to the seabed via jackets and risers, as well as along the seabed through pipelines, flowlines and manifolds.

The presence of subsea infrastructure, and its interaction with hydrodynamic processes, may result in localised seabed disturbance, including scouring and localised sedimentation of fine substrates around infrastructure. Scour may occur due to currents, subsurface waves and seabed sediment dynamics, and may necessitate IMMR activities as part of integrity management practices.

Flowline movement may occur as a result of normal operations and within defined integrity limits along the flowline corridor. This movement may result from flowline buckling, walking and varying metocean conditions, with lateral movement occurring within the corridor. Management of flowline buckling and walking may also necessitate IMMR activities.

Refer also to MEE-02 Subsea Equipment Loss of Containment in Section 6.8.4, which includes controls to manage scour and flowline movement within integrity requirements.

Subsea IMMR activities

Woodside may undertake routine subsea IMMR activities within the Operational Area as described in Section 3.7. These activities may result in localised impacts to the benthic environment in the vicinity of the activity.

IMMR activities with the potential to impact the benthic environment include:

- inspections – localised sediment resuspension by ROV

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- marine growth removal – localised sediment resuspension and removal of marine biota from subsea infrastructure and the GWA platform jacket
- sediment relocation – localised modification of benthic habitat and sediment resuspension
- span rectification, pipeline/umbilical protection and stabilisation – minor, localised modification of benthic habitat within footprint of area subject to rectification/protection/stabilisation
- EFL and HFL replacement.
- jumper, flowline and umbilical replacement – minor, localised modification of benthic habitat in the vicinity of the equipment
- spool repair/replacement – minor, localised modification of benthic habitat in the vicinity of the spool
- temporary placement of tools on the seabed (e.g. tool baskets) – minor localised modification of benthic habitat

The area of seabed disturbance varies depending on the nature and scale of the IMMR activity; however, impacts are expected to be localised. Span rectification represents the activity with the greatest potential to modify the seabed, due to the alteration of the soft sediment habitat to localised areas of artificial hard substrate.

Operational experience on the North West Shelf indicates that such activities (e.g. span rectification, pipeline protection and stabilisation) are typically limited to short (tens of metres) linear sections of pipeline, with up to approximately 100 m^2 of seabed affected.

The GWA platform and associated subsea infrastructure also provide hard substrate habitat for benthic fauna, both within the water column (e.g. jackets and risers) and along the seabed (e.g. pipelines, flowlines and manifolds).

Impact assessment

Environmental value(s) potentially impacted

The seabed within the direct physical footprint of the GWA platform and subsea infrastructure is characterised predominantly by soft sediments. This habitat type is associated with sparsely distributed infauna and sessile fauna and is widely represented within the Operational Area and across the NWS Province.

The presence of the GWA platform and subsea infrastructure provides hard substrate for the settlement of marine organisms, noting the availability of hard substrate is often a limiting factor in benthic communities. As such, installation of infrastructure has facilitated the development of localised ecological communities which would not otherwise occur in the surrounding soft sediment environment. For example, pipeline infrastructure has been shown to support diverse fish assemblages and benthic biota (McLean et al. 2017; Bond 2018). These communities may be more diverse than those in adjacent soft sediment habitats.

The provision of artificial habitat associated with the GWA platform and subsea infrastructure is not expected to result in adverse impacts to benthic communities and may result in slight and low-level changes in community composition and diversity.

Subsea operations and IMMR activities

Subsea operations resulting in scour and infrastructure movement, may result in continuous, low-level seabed disturbance. Scour around subsea infrastructure may alter surrounding soft sediment benthic habitats, however, these impacts are expected to be slight and result in low-level effects to environmental receptors. Flowline movement is limited to design and integrity envelopes and may result in slight, low-level disturbance to soft sediment habitats, typically on the scale of metres to tens of metres along flowline corridors.

IMMR activities may result in:

- direct physical disturbance of benthic habitat; and
- indirect disturbance to benthic habitats from sedimentation.

An assessment of these impacts to relevant receptors is provided below.

Water and sediment quality

Seabed disturbance may result in slight and low-level reductions in water quality due to increased suspended sediment concentrations and subsequent sediment deposition. Similarly, marine growth removal (e.g. water jetting) may cause slight, low-level increases in turbidity.

Each discrete IMMR activity is expected to generate a short-lived plume of sediment, which will settle rapidly in the vicinity of the activity. Sediment loads are expected to be low due to relatively small footprint of individual activities (Section 3.7).

Impacts to water and sediment quality are expected to be slight and low-level.

Benthic habitats

Benthic habitats within the Operational Area are predominately soft sediment, supporting sparsely distributed infauna and epifauna that are broadly represented throughout the NWS Province and wider NWS (Section 1.1). Communities are typically characterised by burrowing infauna (e.g. polychaetes) and low-abundance epifauna, with sessile filter feeders associated with hard substrate such as subsea infrastructure (RPS Environment and Planning 2012).

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The extent of benthic disturbance varies depending on the nature and scale of the IMMR activity. Direct seabed disturbance, including low-level and potentially permanent modification of benthic habitat, may occur for activities such as span rectification, pipeline protection and stabilisation. These activities represent the greatest potential for habitat modification due to the introduction of artificial hard substrate. Operational experience on the NWS indicates such activities are typically limited to short (tens of metres) sections of pipeline, with up to approximately 100 m² of seabed affected.

Scour and flowline movement may also result in low-level disturbance to soft sediment habitats. Where remediation is required (e.g. installation of mattresses or rock), soft sediment habitat is replaced with hard substrate. Over time, this substrate is expected to be colonised by sessile benthic biota, potentially increasing localised habitat complexity.

ROV operations and minor sediment relocation may result in slight, short-term increases in turbidity and localised sedimentation. These effects are expected to be transient and not result in consequential impacts to environmental receptors.

Marine growth removal (e.g. water jetting) may also result in temporary suspension of organic material and localised increases in turbidity. Activities are limited to what is necessary to facilitate inspection or intervention.

The overall extent of disturbance is small relative to the widespread soft sediment habitats present within the Operational Area and the broader NWS Province. Such disturbances may affect small areas of seabed and associated biota; however, impacts are expected to be slight and low-level. Smothering or burial impacts are not expected. Instead, impacts are likely limited to temporary increases in suspended sediments, to which local biota are adapted due to naturally occurring turbidity from tides and cyclonic events. Accordingly, any impacts to benthic habitats will be slight and low-level.

Shoals

Three shoals occur within or near the Operational Area:

- Unnamed Shoal (~40-50 m depth; within the Operational Area)
- Wilcox Shoal (~25-80 m depth; located 2.4 km from the Operational Area).
- Rankin Bank (~18-30.5 m depth; 3.7 km from the Operational Area)

The NWS region experiences naturally high episodic sediment resuspension due to tidal movements and cyclones. Existing survey data of Rankin Bank did not indicate any observable turbidity effects from operations (AIMS 2014b; Section 1.1). Unnamed Shoal is located within the Operational Area, however, there is no overlap with subsea infrastructure. The closest flowline is located ~350 m from the perimeter of the shoal. Any resuspended sediments from IMMR activities are expected to remain slight and low-level and settle prior to reaching the shoal.

Values and sensitivities

Ancient Coastline at 125 m Depth Contour (KEF)

The Operational Area overlaps approximately 276 km² (~1.7%) of the 16,190 km² KEF. The Operational Area represents a 1,500 m buffer around subsea infrastructure, while seabed disturbance is much more localised (typically within tens of metres).

Recent surveys indicate that the KEF is characterised by unconsolidated soft sediments with limited epibenthic biota, consistent with the broader NWS Province (Wakeford et al. 2023). The geomorphic feature is regionally and globally widespread. No features of elevated ecological significance (e.g. escarpments, high productivity areas, or species of conservation significance) have been identified within the Operational Area.

Accordingly, no lasting impacts to this regional-scale KEF are expected.

Montebello Marine Park

The Operational Area overlaps approximately 3 km² (~0.1%) of the 3,413 km² marine park, however, subsea infrastructure does not overlap the marine park. Seabed disturbance is confined to small areas (tens of metres) around infrastructure.

Benthic habitats within the marine park are consistent with the broader NWS region (predominantly sand and rubble with sparse biota) (Keesing 2019, Advisian 2019).

Given the limited spatial overlap, absence of infrastructure within the park, and highly localised nature of disturbance, potential impacts to the environmental values of the Montebello Marine Park are expected to be localised with no lasting effect.

Cultural heritage

Refer to Section 6.11 for an assessment of potential impacts to cultural values and archaeological material from seabed disturbing activities from the Petroleum Activity. Control measures related to cultural heritage have been captured in the tables below to demonstrate that impacts are reduced to ALARP and are of an acceptable level.

Cumulative impacts

Seabed disturbance may arise from the GWA platform, subsea infrastructure and IMMR activities. All vessels used for IMMR activities operate using DP systems and not anchor, except in emergency situations.

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IMMR activities within 500 m of Unnamed Shoal are subject to a supplementary impact assessment to ensure impacts remains appropriately managed.

At a regional scale, cumulative impacts may also arise from the presence of other oil and gas facilities (Table 4-25), associated subsea infrastructure and activities. These activities may result in slight and low-level reductions in water quality and localised modification of soft sediment habitats where infrastructure has a physical footprint.

These impacts are limited in spatial extent and are considered minor relative to the widespread distribution of similar habitats within the Operational Area and the broader region. Accordingly, cumulative impacts are expected to be slight and low-level in the context of the regional availability of comparable habitats.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[24]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
A ROV as left survey is undertaken, to confirm all temporary equipment has been removed and to record location of new subsea infrastructure.	F: Yes. CS: Minimal cost ROV as left survey is standard practice.	In accordance with OPGGS Act Section 572 (3) all temporary equipment is removed when no longer in use.	Legislative requirement – must be adopted	Yes **C 2.1**
Remove redundant production infrastructure as soon as it is no longer used, nor to be used.	F: Yes. CS: Removal of property throughout the operational life where it is incorporated within or located close to live infrastructure introduces additional complexities and HSE risk that can be avoided if removed during EOFL decommissioning.	While subsea equipment is in-situ, risks and impacts to the seabed are considered to be low, so only a minor reduction in sediment disturbance from less infrastructure in the Operational Area if removal occurred immediately.	Cost of standalone retrieval work scopes are considered disproportionate to the benefit gained when considering the risks of retrieval during current operations versus risk of extending duration in-situ. Wet stored subsea infrastructure is also RBI assessed and managed while preserved to ensure integrity and retrieval options are maintained for removal.	No
Monitoring and maintenance of redundant infrastructure is undertaken in accordance with the IMMR/RBI process.	F: Yes. CS: Minimal cost. Standard practice.	Undertaken to enable cost efficient and safe removal of redundant infrastructure in accordance with Section 572(2) and (3) of the OPGGS Act.	Legislative requirement – must be adopted	Yes **C 2.2**
Location of subsea infrastructure brought into the Operational Area is tracked and recorded.	F: Yes. CS: Minimal cost. Standard Practice.	In accordance with OPGGS Act Section 572 (3) the location of equipment is tracked to enable future removal.	Benefits outweigh cost/sacrifice.	Yes **C 2.3**

[24] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[24]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Good practice				
Anchoring in the PSZ is prohibited, except in emergency situations or under issuing of a specific permit.	F: Yes CS: Minimal cost	By minimising anchoring the potential impacts to benthic habitat is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 2.4**
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options. Minimal Cost. As found ROV surveys are standard operating practice.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for seabed disturbance. Implementing this process will protect and minimise any physical impacts to underwater cultural heritage. Additionally, this process is not inconsistent with the draft guidelines for working in the near and offshore environment to protect Underwater Cultural Heritage (DCCEEW 2024b).	Benefits outweigh cost/sacrifice.	Yes **C 3.1**
Unexpected finds of potential Underwater Cultural Heritage sites/ features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in Section 7.2.5.	F: Yes. CS: Cost of implementation.	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the DRAFT Guidelines to Protect Underwater Cultural Heritage under the UCH Act, expert advice and community expectations.	Benefits outweigh cost/sacrifice.	Yes **C 3.2**
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act).	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/sacrifice.	Yes **C 3.3**
Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement	F: Yes. CS: Minimal cost.	Ensures workforce are suitably aware of legal and process requirements for	Benefits outweigh cost/sacrifice.	Yes **C 3.4**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[24]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
to follow the Unexpected Finds Procedure.		managing cultural features and heritage values.		
Professional judgement – eliminate				
All vessels used for IMMR will be DP capable (or equivalent).	F: Yes. CS: Minimal. Subsea support vessels undertaking IMMR activities typically do not anchor.	By not anchoring, the potential impacts to benthic habitat are reduced.	Benefits outweigh cost/sacrifice.	Yes **C 2.5**
Supplementary impact assessment undertaken for all IMMR activities with planned/potential seabed disturbance within 500 m of Unnamed Shoal.	F: Yes. CS: Minimal.	Undertaking a supplementary impact assessment prior to IMMR activities with planned/potential seabed disturbance enables identification and implementation of measures to avoid or minimise impacts to the shoal.	Benefits outweigh cost/sacrifice.	Yes **C 2.6**
Do not use ROV close to, or on, the seabed.	F: No. The use of ROVs (including work close to or occasionally landed on the seabed) is critical as the ROV is an integral part of IMMR activities. CS: Not assessed, control not feasible	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional judgement – substitute				
None identified				
Professional judgement – engineered solution				
Monitoring and maintenance of subsea infrastructure to manage scour and flowline movement to within integrity envelope.	F: Yes, subsea inspection maintenance and integrity monitoring is undertaken which inherently controls extent of scour and flowline movement CS: Minimal cost. Standard practice	Monitoring and maintenance of subsea infrastructure confirms benthic seabed disturbance is limited to design flowline corridor.	Corporate (WMS) requirement – must be adopted.	Yes **C 2.7** Refer also MEE-02
Monitoring of seabed surrounding GWA platform and subsea infrastructure.	F: Yes. ROV footage collected as part of subsea integrity surveys could be reviewed to observe and detect changes in benthic habitats.	Monitoring would provide limited additional environmental benefit given the low sensitivity and widespread nature of benthic habitats in the Operational Area.	The limited environmental benefit is considered disproportionate to the cost and effort of implementing additional monitoring beyond standard	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[24]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	CS: Costs associated with the review of collected footage.		IMMR inspection activities.	

ALARP statement:

On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the adopted controls appropriate to manage the potential impacts of seabed disturbance associated with the GWA platform, subsea infrastructure and IMMR activities on benthic habitats and environmental receptors.

As no reasonably practicable additional or alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts are considered ALARP.

Demonstration of Acceptability
Acceptability statement:
The impact assessment has determined that, given the adopted controls, seabed disturbance associated with the ongoing presence of the GWA platform and subsea infrastructure represents a slight, low-level impact to benthic habitats that is not expected to affect ecosystem function. Seabed disturbance from subsea operations and IMMR activities is short-term and localised and also represents slight, low-level impacts to benthic habitats.
On the basis of the assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), Woodside considers the adopted controls appropriate to manage impacts to a level that is broadly acceptable. Compliance with these controls demonstrates that the EPOs are met.

EPOs, EPSs and MC			
EPO	***Controls***	***PS***	***MC***
EPO 2 Seabed disturbance to be limited to planned activities and impacts described as part of the Petroleum Activity and to not occur outside the Operational Area.	**C 2.1** A ROV as left survey is undertaken, to confirm all temporary equipment has been removed and to record location of new subsea infrastructure.	**PS 2.1** Temporary equipment is removed.	**MC 2.1.1** As left survey confirms temporary equipment is removed
	C 2.2 Monitoring and maintenance of redundant infrastructure is undertaken in accordance with the IMMR/RBI process.	**PS 2.2** IMMR/RBI process is applied to redundant equipment.	**MC 2.2.1** Records demonstrate that the IMMR/RBI process has been applied to redundant infrastructure.
			MC 2.2.2 Inspections and maintenance activities have been completed in accordance with the IMMR/RBI process.
	C 2.3 Location of subsea infrastructure brought into the Operational Area is tracked and recorded.	**PS 2.3** Location of equipment, including those made redundant by the installation of a replacement, are	**MC 2.3.1** Records confirm location of replacement equipment and remaining redundant equipment.

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EPOs, EPSs and MC			
EPO	***Controls***	***PS***	***MC***
		recorded and updated in the inventory.	
	C 2.4 Anchoring in the PSZ is prohibited, except in emergency situations or under issuing of a specific permit.	**PS 2.4** No anchoring in the PSZ unless in an emergency or Woodside authorisation provided.	**MC 2.4.1** Records demonstrate that any anchoring in the PSZ was in an emergency or approved by Woodside.
	C 2.5 All vessels used for IMMR will be DP capable (or equivalent).	**PS 2.5** All vessels used for IMMR activities will not anchor, except in emergency situations or Woodside authorisation provided.	**MC 2.5.1** Records demonstrate that any anchoring during IMMR activities was in an emergency or approved by Woodside.
	C 2.6 Supplementary impact assessment undertaken for all IMMR activities with planned/potential seabed disturbance within 500 m of Unnamed Shoal.	**PS 2.6** Assessment outcomes for IMMR activities with planned/potential seabed disturbance within 500 m of Unnamed Shoal demonstrate impacts to sensitive benthic habitats are negligible.	**MC 2.6.1** Records demonstrate outcomes of additional impact assessment are negligible.
	C 2.7 Monitoring and maintenance of subsea infrastructure to manage scour and flowline movement within integrity envelope.	**PS 2.7** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P09 – Pipeline Systems to; maintain the minimum required mechanical integrity to prevent loss of containment due to scour/flowline movement.	**MC 1.11.1** Refer to Section 6.7.1
EPO 3 No adverse impact[25] to unexpected finds of Underwater Cultural Heritage[26] without a permit[27].	**C 3.1** Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	**PS 3.1** Existing survey data reviewed by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment.	**MC 3.1.1** Records demonstrate review of existing archaeological data completed prior to commencement of activities.

[25] Adverse impacts to UCH without a permit are defined under the Underwater Cultural Heritage Act 201, subsection 30(2).

[26] Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act

[27] Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

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EPOs, EPSs and MC			
EPO	***Controls***	***PS***	***MC***
	C 3.2 Unexpected finds of potential Underwater Cultural Heritage sites/ features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in Section 7.2.5.	**PS 3.2** Underwater Cultural Heritage site or feature is identified, implement an Unexpected Finds Procedure set out in Section 7.2.5.	**MC 3.2.1** No non-compliance with the Unexpected Finds Procedure.
	C 3.3 Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the ATSIHP Act 1984.	**PS 3.3** Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 7.2.5) including to: • DCCEEW underwater archaeology section • Australasian Underwater Cultural Heritage Database via DCCEEW.	**MC 3.3.1** Records of potential UCH finds reported to relevant authorities and stakeholders.
	C 3.4 Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure.	**PS 3.4** Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure (Section 7.2.5) through an induction.	**MC 3.4.1** Records demonstrate vessel crew are made aware of potential to encounter UCH.

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6.7.3 Routine acoustic emissions: generation of noise during routine operations

Context		
Facility layout and description – Section 3.5 Operational details – Section 3.6 Process description – Section 3.6.2 Subsea inspection, monitoring, maintenance and repair activities – Section 3.7 Support vessel operations – Section 3.8 Helicopter operations – Section 3.8.5	Habitats and biological communities – Section 4.5 Protected species – Section 4.6	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Noise generated within the Operational Area from: • GWA platform and associated subsea infrastructure • support vessel operations • helicopter operations • subsea IMMR activities.					✓		A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 4a EPO 4b

Description of source of impact

The GWA platform and subsea infrastructure, support vessels, helicopter operations and subsea IMMR activities generate airborne and underwater noise as a result of machinery and propulsion systems. Typical noise levels for these sources are provided in Table 6-3 and Table 6-4, with further detail described below.

These sources contribute to, and may exceed, ambient noise levels, which typically range from approximately 90 dB re 1 µPa (root square mean sound pressure level [rms SPL]) under calm, low wind conditions, to approximately 120 dB re 1µPa (rms SPL) under higher wind conditions (McCauley 2005).

Sound levels will vary over the course of the Petroleum Activity depending on concurrent operations. Noise associated with the GWA platform and associated subsea infrastructure is generally continuous but relatively low compared to transient vessel and helicopter activities.

Routine vessel activities associated with the Petroleum Activity are primarily concentrated within the PSZ and include both continuous standby vessel operations (typically in two-week periods) and a PSVs to support routine supply operations (weekly visits with total presence in the Operational Area typically less than 24 hours per visit). The standby and PSV may be present at the platform concurrently during routine operations. Subsea support vessels and HLVs may undertake activities (e.g. IMMR activities, removing redundant equipment) throughout the Operational Area, including outside the PSZ. The duration and location of these activities vary depending on operational requirements.

An ASV may be deployed during extended maintenance campaigns, shutdowns or major projects. During such campaigns, the ASV may operate continuously (24 hrs/day) adjacent to the platform. ASV use is expected to be infrequent, with up to one campaign within the EP period (5 years) and for up to three months' duration.

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Key acoustic sources associated with the Petroleum Activity are described in Table 6-3 and Table 6-4. Potential concurrent activities contributing to cumulative underwater noise levels have been used to inform worst-case credible sound propagation scenarios for modelling and cumulative impact assessment.

Table 6-3: Indicative source characteristics of continuous underwater noise associated with the Petroleum Activity

Acoustic noise sources	Estimated SPL (dB re 1 µPa SPL) @1 m unless otherwise stated	Frequency range (kHz)
Vessels (continuous)		
PSVs, subsea support vessels (including USVs), ASVs and HLVs using DP‡	182	Broadband
Wellhead, flowlines and subsea infrastructure (continuous)		
Choke valve / wellhead§	133 – 155	Broadband
Production platforms		
Platform†	110–130 @100 m	Broadband (mainly < 100 Hz)

** Range provided was not measured at the noise source; therefore, this should be used as an indicative estimate only and cannot be used to estimate exposure thresholds closer to the source.*

Sources: †Jiménez-Arranz et al. (2017), ‡McCauley (2005), §McCauley (2002)

Continuous (non-impulsive) sources

Platform machinery

Production platforms have machinery mounted on decks raised above the sea. As a result, most noise is radiated to the environment via the air. Machinery noise onboard the GWA platform may be transmitted into the underwater environment via structural pathways jacket legs and risers, which can act as transducers.

Underwater noise generated by the GWA platform is expected to be minimal. Monitoring programs indicating that underwater noise from production facilities is typically low, or in some cases, not detectable above ambient levels (McCauley 2002).

Gales (1982) assessed noise from 18 oil and gas platforms, including 11 bottom-standing fixed platforms during production operations (i.e. comparable to the GWA platform). The study found that the strongest noise levels were relatively low frequency (< 100 Hz, predominantly between 4 and 38 Hz), with sound levels of 110 to 130 dB re 1 µPa @100 m. Noise from platforms was found to be lower than that from support vessels, with support vessel activity contributing an increase of approximately 20–30 dB in overall underwater noise levels when operating in the vicinity of a platform (Gales 1982).

Noise emissions from the GWA platform are expected to be limited relative to larger processing facilities, reflecting its scale and configuration. Accordingly, the range reported by Gales (1982) is considered conservative.

In summary, underwater noise generated by the GWA platform is expected to be low relative to other noise sources associated with the Petroleum Activity, particularly support vessels.

Flaring

The HP and LP flare system generate noise as a result of combustion. Flaring noise represents a potential occupational health and safety risk consideration and has been accounted for in the design of the GWA platform (e.g. flare tower height and configuration).

Noise from flaring is emitted at the flare tip, located approximately 175 m above sea level, and propagates through the air in all directions.

Airborne propagation modelling has been used to estimate corresponding underwater received levels during flaring activities (Woodside 2019). Only a very small proportion of acoustic energy generated by flaring is transmitted across the air-water interface, with the majority reflected due to the strong impedance contrast between air and water.

Modelled underwater sound pressure levels associated with flaring are estimated to be up to approximately 136 dB re 1 µPa at 1 m below the sea surface but attenuate rapidly to ambient levels over short distances (in the order of metres). Accordingly, underwater noise associated with flaring is expected to be highly localised and of short duration and is not considered a significant contributor to underwater noise levels within the Operational Area and are therefore not considered further in the impact assessment.

Wellhead, pipelines and subsea infrastructure

The noise produced by operational wellheads has been measured by McCauley (2002), with broadband noise levels reported at approximately 113 dB re 1 µPa. This is only marginally above ambient noise levels under rough sea

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conditions. For multiple wellheads, cumulative noise levels would only increase where sources are in close proximity (e.g. <50 m apart), with two adjacent sources increasing the overall sound level by approximately three db.

Accordingly, broadband noise level in the vicinity of wellheads are expected to be in the order of 113 dB re 1 µPa, attenuating rapidly to ambient conditions with distance, and typically returning to background levels within approximately 200 m of the source.

Based on the measurements presented in McCauley (2002), which include flow noise within pipelines, noise emissions from pipelines are expected to be of similar magnitude to wellheads, with radiated noise attenuating to ambient levels over relatively short distances (in the order or tens to hundreds of metres).

Woodside has also undertaken acoustic measurements of noise generated by choke valves at the Angel facility (JASCO 2015), which are comparable in design to subsea valves at GWA. These measurements indicated that choke valve noise is continuous, with frequency and intensity dependent on production rates. Measured sound levels ranged from approximately 154-155 dB re 1 µPa at lower production rates to 141-144 dB re 1 µPa at higher production rates.

Noise from choke valve operation is broadband in nature, with most energy concentrated at frequencies above 1 kHz. While higher than wellhead and pipeline noise at source, choke valve noise is dominated by higher frequencies, which attenuate relatively rapidly in the water column. In addition, noise from subsea infrastructure is minor compared to that generated by vessel thrusters operating in the area.

Overall, noise emissions from subsea infrastructure (including wellheads, pipelines and valves) are expected to be localised and of limited spatial extent, attenuating to ambient levels over relatively short distances. Accordingly, these sources are not expected to represent a significant contributor to underwater noise levels within the Operational Area and are therefore not considered further in the impact assessment.

Support vessels

The primary source of noise from support vessels (PSVs, subsea support vessels, ASVs and HLVs) is the use of DP thrusters, particularly due to cavitation from propellers. Thruster noise is typically high intensity and broadband in nature.

McCauley (1998) reported sound pressure levels of approximately 137 dB re 1 µPa at 405 m from a typical offshore support vessel holding station in strong currents. McCauley (2005) measured broadband noise levels of up to approximately 182 dB re 1 µPa at 1 m from a support vessel holding station in the Timor Sea. Similar noise levels may be generated by vessels operating dynamic positioning (DP) during the Petroleum Activity.

Thruster noise is typically the dominant noise source for vessels holding station, with other sources (e.g. main engines and auxiliary machinery) contributing relatively less to overall underwater noise levels (McCauley 1998).

Vessel presence associated with the Petroleum Activity reflects the range of support activities described in Section 3.8 and varies depending on operational requirements:

- **platform support vessels (PSVs) and standby vessels:**
  A dedicated standby vessel is present at the GWA platform on a continuous basis typically in two-week periods. A separate PSV is used to transfer materials and equipment to and from the GWA platform and typically visits the platform on a weekly basis with total presence in the Operational Area typically less than 24 hours per visit.
- **subsea support vessels (including USVs):**
  Subsea support vessels are used to undertake IMMR activities as discrete campaigns. These campaigns are typically of short to medium duration (approximately 2 weeks to 1 month per campaign) and occur intermittently throughout the year. Activities may be undertaken anywhere within the Operational Area, including outside the PSZ.
- **accommodation support vessels (ASVs):**
  ASVs may be deployed to support planned maintenance campaigns, shutdown activities or major projects. ASV use is expected to be infrequent, with up to one campaign within the EP period (5 years). Campaigns are typically of short to medium duration (up to approximately 3 months), during which the vessel may operate continuously (24 hours per day) adjacent to the platform within the PSZ.
- **heavy lift vessels (HLVs):**
  HLVs may be used for removal of redundant equipment or to support major projects. HLV use is expected to be infrequent, with up to one campaign within the EP period (5 years), typically of short duration (up to 1 month), and undertaken in proximity to the GWA platform or subsea infrastructure.

Support vessels are therefore expected to represent the dominant and most variable source of underwater noise associated with the Petroleum Activity, with variability driven by the frequency and duration of vessel activities.

Helicopter transfers

Helicopter operations involve take-off and landing on the GWA platform helideck and, where required, on support vessels. Within the Operational Area, helicopter movements are typically associated with crew transfers and urgent freight, occurring at an average frequency of approximately 5–7 transfers per week.

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Helicopter noise is primarily airborne, with most sound energy concentrated at frequencies below 500 Hz (Richardson et al. 1995). Sound levels decrease with increasing distance from the source, however, the duration of audibility may increase with altitude as the sound footprint expands.

Due to the strong acoustic impedance contrast between air and water, the sea surface acts as an effective reflector of sound energy. As a result, only a small proportion of airborne noise from helicopter operations is transmitted into the water column, with the majority reflected back into the atmosphere. The angle of incidence also influences transmission, with sound waves approaching the sea surface at angles greater than approximately 13° from vertical being almost entirely reflected (Richardson et al. 1995).

Empirical measurements indicate that while helicopter noise may be audible in air for several minutes prior to overflight, underwater detectability is limited to short durations. Richardson et al. (1995) reported that helicopter noise was detectable underwater for approximately 38 seconds at 3 m depth and 11 seconds at 18 m depth during flyover. Reported peak underwater sound pressure levels include approximately 162 dB re 1 µPa for a Bell 212 helicopter and 108 dB re 1 µPa at 305 m for a Sikorsky S-61 (Simmonds et al. 2004).

Given the limited transmission of sound across the air–water interface, short duration of underwater exposure, and typical operational characteristics (frequency, altitude and transit speed), underwater noise associated with helicopter operations is expected to be highly localised and transient and is not considered a significant contributor to underwater noise levels within the Operational Area. Underwater noise from helicopter operations is therefore not considered further in the impact assessment.

Impulsive sources

Subsea IMMR activities

Subsea IMMR activities may result in localised, temporary increased in underwater noise. Table 6-4 summarises the sources proposed, which have frequency outputs ranging from 2 kHz (SBP CHIRP) to 900 kHz (SSS) and identifies potential overlaps between frequency output and marine fauna hearing ranges.

MBES is a low-energy, high-resolution geophysical survey instrument that may be required for use every 1 to 6 years to identify buckling, movement, scour and seabed features. MBES have operating frequencies ranging from 12 kHz to 700 kHz (Jimenez-Arranz et al. 2017) with peak pressure (PK) source levels between approximately 210 and 245 dB re 1 µPa at 1 m (Jimenez-Arranz et al. 2017; Zykov 2013; MacGillivray et al. 2013). MBES generate micro-pulses of high frequency sound in a highly focused beam directed towards the seabed, which attenuates rapidly underwater compared to lower frequency sound sources. Due to this directionality and short pulse duration, there is relatively low sound energy and very limited horizontal sound propagation. Additionally, sound sources generated closer to the seabed have a lower received noise level in the horizontal direction due to seafloor scattering and absorption.

Sub-bottom profiling may also be undertaken every 1-6 years to identify features under the seabed. Most commercial SBPs are small, low-powered, high-resolution and shallow-penetrating systems, producing electrical pulses across a range of frequencies (Salgado Kent et al. 2016; Jiménez-Arranz et al. 2017). The instruments proposed for the survey produce pulses of sound between approximately 2 kHz and 30 kHz with source levels between approximately 170 and 230 dB re 1 µPa PK at 1 m.

Table 6-4: Frequency ranges of IMMR sources and marine fauna

IMMR source	Frequency range (kHz) (Jimenez-Arranz et al. 2017)	Estimated range of source level (dB re 1 µPa SPL @1 m	Potential disturbance from acoustic source						
			Low-frequency cetaceans[1]	High-frequency cetaceans[1]	Very High-frequency cetaceans[1]	Marine turtles[3]	Whale sharks[2]	Fish – hearing specialists[4]	Fish – hearing generalists[4]
Auditory frequency range (kHz)			*0.07 – 36*	*0.15 – 160*	*0.2 – 165*	*0.1 – 0.7*	*0.02 – 0.8*	*0.1 – 3*	*0.2 – 0.8*
MBES	12 – 700 (deep) 150 – 700 (shallow)	210 – 247	Deep only	✓	✓				
SBP – Chirp	2 – 23	167 – 212	✓	✓	✓			✓	

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SBP – Pinger	2 – 20	161 – 205	✓	✓	✓			✓	
USBL / Acoustic Array	18 – 36	187 – 196	✓	✓	✓				

[1] NMFS 2024

[2]The estimated auditory bandwidth of whale sharks is unknown, a range of 0.02 – 0.8 kHz has been applied which is the known approximate sensitivity of among sharks as outlined in Myrberg 2001. Although there are no known studies on whale shark auditory hearing bandwidths, research suggests the large hearing structures of the whale shark would be most responsive to long-wave length, low-frequency sound (Myrberg 2001).

[3]The estimated auditory bandwidth of turtles is 0.1 – 0.7 kHz as determined by electro-physical studies (McCauley 1994)

[4]Effects of seismic airguns and other sources of pulsed sound on marine fishes (URS 2007).

Positioning equipment

Long baseline (LBL) and/or ultra-short baseline (USBL) acoustic transponders may be used for positioning during IMMR activities. These systems emit pulses of medium-frequency sound, typically within the range of approximately 21-31 kHz. Sound levels are estimated to range from approximately 180-202 dB re 1 µPa SPL at 1 m (Jiménez-Arranz et al. 2017).

Transmissions are not continuous but consist of short pulses ('chirps'), typically ranging from approximately 3-40 milliseconds. Transponders do not emit sound when on standby and, when active for positioning, typically emit a single pulse approximately every five seconds.

Cumulative noise sources

Concurrent activities contributing to cumulative underwater noise from operations may occur where vessel activities overlap within the Operational Area.

A conservative worst-case scenario for cumulative underwater noise considers concurrent operation of:

- the GWA platform and subsea infrastructure
- a platform support vessel operating within or transiting the PSZ
- a subsea support vessel undertaking IMMR activities within the Operational Area
- the potential for a HLV operating within the Operational Area (typically up to 1 month duration)
- the potential for an ASV operating within the PSZ during extended campaigns (typically up to 3 months duration).

Cumulative noise levels are most likely to occur during overlapping vessel campaigns. However, these scenarios are infrequent and of limited duration, reflecting the intermittent nature of IMMR and major project activities.

These concurrent activity scenarios have been used to inform a conservative assessment of cumulative underwater noise, supported by analogue sound propagation modelling representative of the types of activities undertaken during the Petroleum Activity.

Sound transmission loss modelling

Noise modelling was commissioned by Woodside for the Greater Western Flank 4 (GWF4) activities (Warren et al. 2026), which are located within the Operational Area. Scenario 2 in the modelling report considers a combination of vessels operating in close proximity, including a moored MODU, anchor handling tug (AHT) vessel, offshore support vessel (OSV) and subsea construction vessel (SCV).

This scenario represents a conservative analogue for the worst-case concurrent vessel activities described in this EP, noting that it includes multiple high-powered vessels operating simultaneously in close proximity. The GWF4 modelling is also spatially aligned with the GWA Operational Area, allowing direct application of the results without adjustment for environmental parameters such as water depth or sediment type.

To further inform cumulative noise associated with IMMR activities, Woodside commissioned a separate study assessing underwater noise from multiple offshore facilities and support vessels, including a representative IMMR vessel (Fugro *Etive*) (Li et al. 2024). This study provides a conservative estimate of the ensonified area associated with IMMR vessel operations and supports assessment of concurrent vessel activity scenarios.

Impact assessment

Receptors

The Operational Area is located in waters about 74 m to 200 m deep, with depths decreasing around shoal features such as Unnamed Shoal (~40-50 m depth). The fauna associated with these areas is predominantly pelagic species of fish, with migratory species such as turtles, birds, whale sharks and cetaceans potentially present in the area

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seasonally. These fauna species may include those associated with Indigenous peoples' cultural values. Noise interference is a key threat to a number of migratory and threatened cetaceans and marine turtles identified as potentially occurring within the Operational Area (Section 6.10).

A number of EPBC listed marine species with credible impact pathways have BIAs which overlap the Operational Area, including:

- flatback turtle internesting buffer BIA
- whale shark foraging BIA

In addition, habitat critical to the survival of the flatback turtle also overlaps the Operational Area.

Flatback turtles nest in the region between October and March, however, given water depths and distance from shore, the area does not constitute foraging or important internesting habitat. Satellite tracking of flatback turtle nesting populations (Barrow Island and mainland sites) indicates this species travels to the east of Barrow Island between nesting events, within WA mainland coastal waters less than 70 m deep (Chevron Australia Pty Ltd 2015).

Whale sharks will be present between March and November and wedge-tailed shearwaters between August and April. Due to the lack of roosting or nesting habitat for wedge-tailed shearwaters in proximity to the Operational Area, only a low density is expected even during peak nesting periods. Cetaceans, such as blue whales and humpback whales, and other marine turtle species may also be present within the Operational Area seasonally; however, no BIAs or other important areas for these species overlap the Operational Area.

While the Ancient Coastline at 125 m Depth Contour KEF may be associated with outcroppings of hard substrate, no evidence of significant reefs associated with such outcroppings has been found in the Operational Area. Note some demersal fish are likely to be associated with subsea infrastructure such as pipelines (McLean et al. 2017). Rankin Bank hosts marine fauna such as fishes and is located approximately 3.7 km from the Operational Area (at the closest point), and 33 km from the GWA facility. Unnamed Shoal is overlapped by the Operational Area and located 1.9 km from the nearest flowline, whilst Wilcox Shoal is located 2.4 km from the Operational Area. Shoals and banks are typically shallower than surrounding environment and may therefore host fish assemblages.

The Operational Area overlaps the Montebello Marine Park, the values and sensitivities of which include the Ancient Coastline at 125 m Depth Contour KEF and BIAs for flatback turtles, whale sharks and wedge-tailed shearwaters.

The Conservation Management Plan for the Blue Whale (BWCMP) (Commonwealth of Australia 2015a) is a recovery plan established under the EPBC Act. The BWCMP specifically identifies areas crucial for the whales' survival, referencing BIAs, including foraging areas and migration corridors representing two essential aspects of their life cycle. Action Area A.2.3 of the BWCMP states: "Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to utilise the area without injury and is not displaced from a foraging area". Furthermore, from the Guidance on Key Terms within the Blue Whale Conservation Management Plan (DAWE 2021), underwater noise emissions from the Petroleum Activity must not:

- result in injury[28] (TTS or PTS) to any pygmy blue whale in BIAs; or
- displace a pygmy blue whale from a foraging BIA.

These requirements have been considered throughout the impact assessment with respect to blue whales.

As noted above, the Operational Area does not overlap BIAs or other important areas for blue whales and humpback whales. The Operational Area is approximately 26 km from the blue whale migration BIA and 15 km from the humpback whale migration BIA.

The National Recovery Plan for the Southern Right Whale (DCCEEW 2024a) also identified anthropogenic noise as a threat, however the BIAs and habitat critical to the survival are over 200 km away, well outside the area where behavioural responses are expected to extend from the Operational Area and as such, there is not expected to be any anthropogenic noise from the petroleum activity that could displace or interfere with life cycle activities within, or near, the reproduction or migration BIAs and habitat critical to the survival.

Potential impacts of noise

Elevated underwater noise can affect marine fauna, including cetaceans, fish, turtles, sharks and rays, in three main ways (Richardson et al. 1995; Simmonds et al. 2004):

- by causing direct physical effects on hearing or other organs. Hearing loss may be temporary (temporary threshold shift (TTS) referred to as auditory fatigue), or permanent threshold shift (PTS) (injury)
- by masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey)

[28] *For the purpose of interpreting and applying Action Area A.2 of the Blue Whale CMP, injury is both permanent and temporary hearing impairment (Permanent Threshold Shift and Temporary Threshold Shift) and any other form of physical harm arising from anthropogenic sources of underwater noise (DAWE, 2021).*

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- through disturbance leading to behavioural changes or displacement from important areas (e.g. BIAs). The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation.

Increasing the distance from the noise source usually results in the level of noise reducing, due primarily to the spreading of the sound energy with distance. The way that the noise spreads (geometrical divergence) will depend upon several factors such as water column depth, pressure, temperature gradients, and salinity, as well as surface and bottom conditions.

Cetaceans

Species sensitivity and exposure thresholds

Marine mammals and especially cetaceans rely on sound for important life functions including individual recognition, socialising, detecting predators and prey, navigation and reproduction (Weilgart 2007; Erbe et al. 2015; Erbe et al. 2018). Underwater noise can affect marine mammals in various ways including interfering with communication (masking), behavioural changes, a shift in the hearing threshold (PTS and TTS), physical damage and stress (Erbe 2012; Rolland et al. 2012).

Frequency-specific hearing sensitivity differs among marine mammals, influencing how they are affected by noise exposure. For the purposes of predicting the effects of noise exposure on different groups of cetaceans, blue whales, humpback whales, southern right whales and other large mysticete (baleen) whales are categorised as LF cetaceans, while odontocetes (toothed whales and dolphins) are categorised as HF or VHF cetaceans (Southall et al. 2019).

As discussed within Accomando et al. (2025) and NMFS (2024), intense noise exposures can cause auditory injury (without PTS occurring). Therefore terms 'PTS' and 'auditory injury' are used interchangeably in this impact assessment and the acoustic modelling study. It is acknowledged auditory injury may occur without PTS.

The thresholds that could result in behavioural response, TTS and PTS for cetaceans as a result of continuous and impulsive noise sources are presented in Table 6-5. These thresholds have been adopted by the United States National Oceanic and Atmospheric Administration (NOAA) (National Marine Fisheries Service [NMFS] 2024; Southall et al. 2019; NOAA 2019). The NMFS (2024) thresholds were retained, consistent the recommendations presented by NMFS (2025). While Accomando, et al (2025) subdivided cetaceans into four groups, the thresholds applied remained consistent with the NMFS (2024) values. The behavioural response criterion from the US National Oceanic and Atmospheric Administration (NOAA, 2019) has been applied. The adopted thresholds are based on best data available and published in peer-reviewed literature and represent conservative internationally accepted and applied impact evaluation thresholds.

Table 6-5: Thresholds for PTS, TTS and behavioural response onset for LF, HF and VHF cetaceans for continuous and impulsive noise.

Hearing group	Impulsive					Continuous		
	PTS onset		TTS onset		Behavioural response	PTS onset	TTS onset	Behavioural response
	SEL_{24h}	PK	SEL_{24h}	PK	SPL	SEL_{24h}	SEL_{24h}	SPL
LF cetaceans	183	222	168	216	160	197	177	120
HF cetaceans	193	230	178	224		201	181	
VHF cetaceans	159	202	144	196		181	161	

Source: NMFS (2024); Southall (2019); NOAA (2019). SEL24h expressed as dB re 1 µPa².s; Peak pressure (PK) and SPL expressed as dB re 1 µPa.

Predicted underwater noise impacts to cetaceans

The Operational Area does not overlap any BIAs for threatened or migratory marine mammal species.

Concurrent vessel activities

The modelling study (Warren et al. 2026) indicated that, for concurrent vessel activities (Scenario 2), the maximum distances at which PTS and TTS thresholds may be exceeded for low frequency (LF) cetaceans are 680 m and 5.17 km from the source, respectively (Table 6-6). For HF and VHF cetaceans, the maximum distances at which PTS and TTS thresholds may be exceeded is 60 m (Table 6-6).

The PTS and TTS thresholds considered the criteria from NMFS (2024) and are based on a cumulative sounds exposure over a 24 hour period (SEL_{24h}) and assume an animal is consistently exposed to such noise levels at a fixed position. In practice, it is unlikely that individual cetaceans transiting through the Operational Area would remain within

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the predicted exposure zones for sufficient time to experience PTS or TTS. For LF cetaceans, this would require an individual to remain within approximately 680 m of the source for PTS, or within 5.17 km for TTS, for a period of 24 hours. Similarly, it is highly unlikely that HF or VHF cetaceans would experience PTS or TTS as the relevant thresholds are only exceeded within 60 m of the source.

Potential impacts to cetaceans may also include behavioural disturbance from support vessels. The threshold that could result in behavioural response for LF cetaceans if exceeded, is expected to be 120 dB re 1 µPa (SPL) for continuous noise sources such as support vessels. This threshold may be exceeded at a distance of 11.5 km from the source (Table 6-6).

Table 6-6: Modelled horizontal distances (R_{max}) for cetacean impact thresholds for concurrent vessel activities (Warren et al. 2026)

Hearing group	Maximum modelled distance to noise effect criteria (Scenario 2 Rmax)		
	Behavioural response [a] (km)	***PTS/ auditory injury [b] (km)***	***TTS [b] (km)***
LF cetaceans	11.5 (SPL)	0.68 (SEL_{24h})	5.17 (SEL_{24h})
HF cetaceans		0.06 (SEL_{24h})	0.69 (SEL_{24h})
VHF cetaceans		0.06 (SEL_{24h})	1.24 (SEL_{24h})

Noise exposure criteria: a NOAA (2019) and b NMFS (2024)

IMMR Activities

Zykov (2013) conducted acoustic modelling for five low energy survey instruments off the coast of California, including MBES, SSS and sub-bottom profiler. All equipment types were modelled in the sandy bottom environment, similar to that of the Operational Area. Although the bathymetry, salinity, water temperature and sub-seafloor sediment type may differ, given the similarities in equipment type and seafloor habitat, the modelling is considered comparable for the nature and scale of the low energy IMMR survey equipment.

The high operating frequencies of MBES places the majority of sound frequencies above the auditory range of LF cetaceans. Dolphins and other HF cetaceans, which have peak hearing sensitivity up to 110 kHz, with potential for some limited hearing ability up to approximately 160 kHz (NMFS 2018; Southall et al. 2019), may be able to detect a small amount of the sound energy from some instruments in the lower operating frequency ranges available for MBES and SSS (MacGillivray et al. 2013; Zykov 2013). The modelling by Zykov (2013) indicates that the sound emissions from MBES do not exceed PTS and TTS accumulated sound exposure criteria for LF cetaceans at any distance, and do not exceed criteria for HF cetaceans beyond 2 to 3 m horizontal distance from the source, which is not considered to be a credible exposure scenario for mobile marine fauna.

Zykov (2013) also estimated the maximum distance at which the unweighted 160 dB re 1 µPa (SPL) behavioural disturbance threshold for impulsive sound was reached was 290 m for MBES. Again, it is emphasised that many MBES instruments may operate at frequencies outside of the hearing range of cetaceans and so these would not be audible or result in behavioural disturbance. For instruments with frequencies that overlap with the hearing ranges of cetaceans, a significant proportion of the sound energy may still be outside of their hearing ranges; therefore, the perceived sound levels are reduced and the horizontal distances at which behavioural disturbances may occur are less than those inferred by the unweighted 160 dB re 1 µPa (SPL) behavioural disturbance threshold. For example, modelling of weighted SPLs by Zykov (2013) for MBES indicated that the 160 dB re 1 µPa (SPL) behavioural threshold was not exceeded for LF cetaceans at any distance and was limited to approximately 205 m horizontal distance for HF cetaceans.

Acoustic modelling of sub-bottom profilers by Zykov (2013) and McPherson and Wood (2017), indicates limited horizontal sound propagation outside of the main directional field of sound. The modelling studies also indicate that PK and SEL24h thresholds for PTS are not exceeded. The potential for TTS resulting from SEL24h is limited to within a few metres from the moving sound source (Zykov 2013; McPherson and Wood 2017), which is not considered to be a credible exposure for mobile marine fauna. Exceedance of the 160 dB re 1 µPa SPL behavioural response threshold for impulsive sound is limited to within a few metres in most instances, or up to a maximum of 50 m depending upon which SBP instrument is used, water depth and the seabed sediment characteristics (Zykov 2013; McPherson and Wood 2017). Potential impacts to cetaceans from MBES and sub-bottom profiler may, therefore, include behavioural disturbance if in close proximity to the survey instruments, but ranges to disturbance are less than or equivalent to disturbance ranges for the IMMR vessel itself. PTS or TTS are not considered credible, given individuals would need to be directly next to the noise sources for prolonged duration.

Transponders used for positioning during IMMR activities have the potential to cause some temporary behavioural disturbance to cetaceans. The typical frequencies of 21 to 31 kHz produced by the transponders are most audible to HF cetaceans such as toothed whales and dolphins rather than LF cetaceans, and the source levels (180 to 202 dB re 1 µPa at 1 m SPL) rapidly attenuate within a very short distance from the source, such that PTS or TTS are not considered credible. Based on empirical spreading loss estimates measured by Warner and McCrodan (2011),

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received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources to a distance of ~42 m.

Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3 to 40 milliseconds. Transponders do not emit sound when on standby. When required for general positioning, they emit one chirp every five seconds (estimated to be required for 4 hrs at a time). When required for precise positioning, they emit one chirp every second (estimated to be required for 2 hrs at a time). Due to the short duration chirps, the temporary and intermittent use and the mid frequencies used by positioning equipment, the acoustic noise from the transponders is unlikely to have a substantive effect on the behavioural patterns of cetaceans. Potential impacts from predicted noise levels from the GWA facility, support vessels, and IMMR activities are not considered to be ecologically significant at a population level.

Impact Assessment – Behavioural

Acoustic modelling indicated that the Rmax from the source to SPL noise effect criteria for all marine mammals was predicted to be 11.5 km from worst-case concurrent vessel activities (Warren et al. 2026). Potential impacts to cetaceans from a single subsea support vessel operating concurrently with other noise sources may include behavioural disturbance from DP. In 2024, JASCO modelled cumulative noise sources including a representative IMMR vessel, Fugro Etive (Li et al. 2024). The distance from the Fugro Etive at which the behavioural impact threshold for cetaceans was no longer exceeded was ~7.5 km. This result was achieved in conjunction with other vessels and facilities in the region and is considered conservative relative to a single vessel planned for IMMR activities.

As identified in Section 4.6.3, several marine mammal species listed as either threatened and/or migratory under the EPBC Act have the potential to occur within the Operational Area. The threatened and/or migratory cetaceans that may be present within the Operational Area are low-frequency (pygmy blue whale, humpback whale, sei whale, Bryde's whale, Omura's whale, fin whale) and high-frequency (dolphins and toothed whale) cetaceans (Section 4.6.3). Of the threatened and/or migratory cetaceans that may be present within the Operational Area, the following is of note:

- the humpback whale migration BIA is located ~15 km from the Operational Area and is not expected to overlap the concurrent vessel activities predicted ensonified area
- the pygmy blue whale migration BIA is located ~26 km from the Operational Area and is not expected to overlap the predicted ensonified area for any combination of concurrent or cumulative activities.

All cetacean species present within the Operational Area may transit through the area; however, no areas of known aggregation within or around the ensonified area have been identified. Migrating pygmy blue whales are likely to occur in the Exmouth to Montebello Islands region from April to July (peak northern migration) and November to December (peak southern migration). Humpback whales are typically present from July to August (peak northern migration) and August to October (peak southern migration) (Section 4.6.5). Opportunistic cetacean sighting data from Woodside's facilities on the NWS indicate that humpback whales are the most commonly observed cetacean species.

Marine mammals are not expected to occur within the Operational Area in significant numbers because no known aggregation areas occur there, and their presence would be seasonal, transitory, and of a short duration. There are no physical constraints (e.g. shallow embayments or shorelines) that prevent marine mammals from moving away from the platform or vessels if disturbed.

Accordingly, behavioural responses are expected to be limited to temporary avoidance or short-term behavioural changes by individual animals in proximity to the activity, with no population-level effects and no significant impact to the ecological function of any BIAs.

Impact assessment – auditory impairment (TTS) or auditory injury (PTS)

LF cetaceans

Acoustic modelling (Warren et al. 2026) indicated that the R_{max} from the source to TTS and PTS SEL_{24h} noise effect criteria during concurrent vessel activities for low-frequency cetaceans was 5.17 km and 680 m, respectively (Table 6-6), whilst Li et al. (2024) predicts the R_{max} from cumulative activities (for LF cetaceans) to be 1.78 km and 100 m respectively. As identified in Section 4.6.3, several marine mammal species listed as either threatened and/or migratory under the EPBC Act have the potential to occur within the Operational Area.

Summary

Exposure of cetaceans, including marine mammal species listed as threatened and/or migratory under the EPBC Act, to sound levels associated with PTS or TTS is expected to be limited to a localised area around vessels during concurrent vessel activities. Given the transient nature of cetacean occurrence within the Operational Area, the absence of overlapping marine mammal BIAs, and the limited spatial extent of the predicted PTS and TTS zones, auditory injury (PTS) and auditory impairment (TTS) are not considered likely, and no lasting effects are expected. Potential impacts are expected to be limited to temporary behavioural responses by individual animals in proximity to vessels with no lasting effects on individuals, populations, or the ecological function of nearly BIAs.

Marine turtles

Species sensitivity and exposure thresholds

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The Recovery Plan for Marine Turtles (Commonwealth of Australia 2017) notes there is limited information available on the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). However, turtles have been shown to respond to low frequency sound, with indications that they have the highest hearing sensitivity in the frequency range 100 to 700 Hz (Bartol and Musick 2003).

Acute noise, or temporary exposure to loud noise, may result in the avoidance of important habitats and in some situations physical damage to marine turtles. The thresholds that could result in a behavioural response, TTS and PTS for marine turtles as a result of continuous and impulsive noise sources are presented in Table 6-7. These thresholds are based on best data available and published in peer-reviewed literature and represent conservative internationally accepted and applied impact evaluation thresholds. Accomando et al (2025) presented thresholds for auditory impairment (TTS) and auditory injury/PTS and are shown in Table 6-7. No numerical thresholds have been developed for behavioural impacts of continuous sources (e.g. vessel noise) on marine turtles. A Popper et al. (2014) review assessed thresholds for marine turtles and found qualitative results that the risk of behavioural disturbance was high for near field exposure, moderate for intermediate exposure and low for far field exposure and is presented in Table 6-7. The Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017) acknowledges the 166 dB re 1 µPa SPL reported McCauley et al. (2000) as the level that may result in a behavioural response to marine turtles. The 175 dB re 1 µPa level from McCauley et al. (2000) is recommended as a criterion for behavioural disturbance; these thresholds are shown in Table 6-7.

Table 6-7: Thresholds for PTS, TTS and behavioural response onset in marine turtles for continuous and impulsive noise

Hearing group	Impulsive			Continuous		
	PTS/ auditory injury onset thresholds: SEL_{24h} (dB re 1 µPa².s)	TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)	Behavioural response: SPL (dB re 1 µPa)	PTS/ auditory injury onset thresholds: SEL_{24h} (dB re 1 µPa².s)	TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)	Behavioural response (dB re 1 µPa)
Marine turtles	184[4]	169[4]	166[1] 175[2]	198[4]	178[4]	(N) High (I) Moderate (F) Low[3]

1. *Behavioural response threshold (impulsive) (McCauley et al. 2000).*
2. *Behavioural disturbance threshold (impulsive) (McCauley et al. 2000).*
3. *Behavioural disturbance threshold (continuous) (Popper et al. 2014)*
4. *Revised thresholds (Accomando et al. 2025)*

Note: The sound units provided in the table above for continuous noise include: relative risk (high, medium and low) is given for marine turtles at three distances from the source defined in relative terms as near (N – tens of metres), intermediate (I – hundreds of metres) and far (F – thousands of metres) (after Popper et al. 2014).

Predicted underwater noise impacts to turtles

The Operational Area overlaps an internesting BIA and internesting habitat critical to the survival of flatback turtle (Section 4.6.2). Habitat suitability modelling for internesting flatback turtles in the NWS region of WA (Whittock, Pendoley and Hamann 2016) concluded that unsuitable flatback turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Whittock, Pendoley and Hamann 2016), and therefore the Operational Area is classified as unsuitable for internesting flatback turtles.

Concurrent vessel activities

Modelling (Warren et al. 2026) indicated that PTS and TTS thresholds for turtles may be exceeded at a maximum distance of 160 m and 2.91 km, respectively (Table 6-8). Prolonged exposure (≥ 24 hours) of marine turtles at close range is not considered credible.

Table 6-8: Modelled horizontal distances (Rmax) for marine turtle impact thresholds for concurrent vessel activities (Warren et al. 2026)

Hearing group	Maximum modelled distance to noise effect criteria (Scenario 2 R_{max})	
	PTS/ auditory injury [a] (km)	TTS [a] (km)
Marine turtles	0.16	2.91

Noise exposure criteria: a Accomando at al. (2025)

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Routine vessel activities are mostly concentrated within the PSZ within the Operational Area, with the nearest nesting beaches over 35 km away (Section 4.6.2). Therefore, no lasting effect from behavioural response impacts are expected and limited to transient individuals passing through the area, with no population-level effects anticipated.

Marine turtles are not expected to occur in high densities in the Operational Area, even during internesting periods. Turtles are also capable of avoiding noise sources, and there are no barriers to movement within the Operational Area. Based on the limited spatial and temporal overlap and the low likelihood of sustained exposure, the potential behavioural response impacts on turtles from the Petroleum Activity are assessed to be of no lasting effect and with no measurable effect on population viability.

IMMR activities

As outlined above for cetaceans, Zykov (2013) conducted noise modelling for low energy survey instruments, with the modelling for MBES and sub-bottom profiler considered comparable for the nature and scale of the low energy IMMR survey equipment. The operating frequencies of MBES (12 to 700 kHz) are well above the hearing range of turtles (0.1 to 0.7 kHz) and so no disturbance is expected. It is possible that some of the lower frequency sound emitted by sub-bottom profilers (2 to 30 kHz) may be audible to turtles, but again, a large proportion of the sound energy may be at frequencies that are outside of their normal auditory range. Modelling of impulsive sub-bottom profiler sound emissions by Zykov (2013) and McPherson and Wood (2017) indicates that the 166 dB re 1 µPa (SPL) behavioural response threshold for turtles may only be exceeded within metres or tens of metres of the survey instruments. Therefore, behavioural impacts would be highly localised. PTS or TTS is not considered to be credible given the rapid attenuation of sound close to the source and a large proportion of the sound energy is produced at frequencies outside the peak hearing frequency range of turtles.

Transponders used for positioning during IMMR activities typical operate at frequencies of 21 to 31 kHz which is well outside the peak hearing frequency range of turtles (0.1 to 0.7 kHz). Therefore, no impacts are considered credible.

Summary

Potential impacts from predicted noise levels from the facility, support vessels, and IMMR activities are not considered to be ecologically significant at a population level, with no lasting impacts to marine turtles.

Fish, sharks and rays

Species sensitivity and exposure thresholds

Fishes are primarily sensitive to the particle motion component of sound at close range to a sound source, while the presence of the swim bladder results in a varying degree of sensitivity of some fishes to sound pressure (Popper and Hawkins 2018; Popper et al. 2019). Consequently, fishes are broadly categorised into three groups with respect to their hearing capabilities that are relevant to the types of fishes and sharks that may be present in the Operational Area (Popper et al. 2014):

- fishes with no swim bladder or other gas chamber (e.g. sharks, mackerels) – Sensitive only to particle motion, not sound pressure changes.
- fishes with swim bladders, but without a direct connection between the swim bladder and the inner ear (e.g. demersal snappers and emperors) – Hearing primarily involves particle motion with some limited ability to indirectly detect changes in sound pressure.
- fishes with a swim bladder or other gas volume connected directly to the inner ear (e.g. herrings, sardines, pilchards, shads) – These fishes are able to detect both sound pressure as well as particle motion.

Sound exposure criteria applicable to continuous sound sources are presented in Table 6-9. Popper et al. (2014) propose relative risk criteria (high, moderate, low) for injury, impairment and behavioural effects to fishes at three distance categories, near (N) (tens of metres from the source), intermediate (I) (hundreds of metres from the source), and far (F) (kilometres from the source).

Table 6-9: Thresholds for PTS, TTS and behavioural response onset in fishes for continuous and impulsive noise

Receptor	Mortality and potential mortal injury	Impairment			Behaviour
		Recoverable injury	TTS	Masking	
Fish: no swim bladder	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not involved in hearing	(N) Low (I) Low	(N) Low (I) Low	(N) Moderate (I) Low	(N) High (I) High	(N) Moderate (I) Moderate

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	(F) Low	(F) Low	(F) Low	(F) Moderate	(F) Low
Fish: swim bladder involving hearing	(N) Low (I) Low (F) Low	170 dB SPL for 48-hours	158 dB SPL for 12-hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low

Note: The sound units provided in the table above include relative risk (high, medium and low) is given for fish (all types) at three distances from the source defined in relative terms as near (N – tens of metres), intermediate (I – hundreds of metres) and far (F – thousands of metres) (after Popper et al. 2014).

Predicted Underwater Noise Impacts to Fish

The whale shark foraging BIA overlaps the Operational Area, and the species may be seasonally present (particularly between March and July) during their annual migration to and from the aggregation area off Ningaloo Reef. The only quantitative sound exposure thresholds for fish are for those species where the swim bladder is involved in hearing. All threatened and migratory fish species occurring within the Operational Area (Section 4.6.1), including whale shark, are Chondrichthyes (sharks and rays) which do not have a swim bladder. Therefore, there are currently no quantitative sound exposure thresholds relevant to listed threatened and migratory species in the Operational Area.

Concurrent vessel activities

Modelling (Warren et al. 2026) indicated that TTS thresholds for fish (swim bladder involved in hearing) may be exceeded at a maximum distance of 80 m, however recoverable injury thresholds are not reached (Table 6-10). Li et al. (2024) predicts the R_{max} from cumulative activities to be 20 m for recoverable injury and 5 m for TTS.

Table 6-10: Modelled horizontal distances (Rmax) for fish impact thresholds for concurrent vessel activities (Warren et al. 2026)

Hearing group	Maximum modelled distance to noise effect criteria (Scenario 2 R_{max})	
	Recoverable injury[a] (km)	TTS[a] (km)
Fish (swim bladder involved in hearing)	-	0.08

Noise exposure criteria: a Popper et al. (2014)

A dash (–) indicates the acoustic threshold was not reached within the 20 m modelling resolution.

Vessels holding station using DP are expected to produce sound equivalent to about 182 dB re 1 µPa SPL at 1 m. Modelling undertaken by McPherson et al. (2019) of sound produced by facility and vessel operations found that recoverable injury to some types of fish would only be possible if they remained within a distance of less than 10 m for 48 hours, and TTS if fishes remained within 10 m for at least 12 hours. Pelagic fish are highly mobile and the types of demersal fishes known to occur in the vicinity of the GWA facility (e.g. snappers, emperors, cods and groupers) will exhibit some fidelity to the area but are still relatively free-swimming and are not constrained to such close ranges (i.e. 10 m). Therefore, free-swimming fish remaining in close range to sound sources for periods that subject themselves to TTS and injury is not considered to be a credible scenario.

There are no quantitative sound exposure thresholds for impacts on sharks and rays (as found in the Operational Area) resulting from continuous noise sources. The relative risk of behavioural response is expected to be high within tens of metres of the source, medium within hundreds of metres and low within kilometres from the source (refer Table 6-9). In the context of the GWA facility, the largest contribution to operational noise is from the topside and near the surface, with lower sound levels produced from subsea infrastructure such as choke valves. Similarly, sound from support vessels would be at the surface. While some localised behavioural avoidance and masking in the vicinity of the loudest sound sources from the facility, choke valves and support vessels may occur in some fishes, no lasting effect is anticipated. Fish are also known to habituate to continuous noise sources, which is consistent with fish congregating around operating offshore oil and gas structures.

The foraging BIA for whale shark overlaps the Operational Area. It is expected that the potential effects of noise on whale sharks are the same as for other fish species, resulting in minor, localised and temporary behavioural change such as avoidance. Therefore, impacts to whale sharks from support vessels or the platform are expected to have no lasting effect.

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Other fauna associated with the Operational Area includes predominantly pelagic species of fish, with migratory species such as rays transiting through the Operational Area; these species may be similarly affected by noise from the Petroleum Activity. Potential impacts from predicted noise levels from the operating facility, support vessels and concurrent vessel activities are not considered to be ecologically significant at a population level for fish, sharks and rays.

Rankin Bank and Wilcox shoal are known to support diverse fish assemblages (Section 4.5). Unnamed Shoal is located within the Operational Area, and its bathymetry and known benthic communities indicate it is also likely to support site attached fish communities (Section 4.5). However, subsea infrastructure is located away from these shoal features, and behavioural response distances for fish are predicted to occur over hundreds rather than thousands of metres. Accordingly, fish assemblages associated with Rankin Bank, Wilcox Shoal and Unnamed Shoal are not expected to be exposed to noise levels that would result in behavioural disturbance.

IMMR Activities

As outlined above, Zykov (2013) conducted noise modelling for low energy survey instruments, with the modelling for MBES and sub-bottom profiler considered comparable for the nature and scale of the low energy IMMR survey equipment. The operating frequencies of MBES (12 to 700 kHz) are well above the peak hearing ranges of fish (100 Hz to several kHz) and so no disturbance is expected. It is possible that some of the lower frequency sound emitted by sub-bottom profilers (2 to 30 kHz) will be audible to fish, but again, a large proportion of the sound energy may be at frequencies that are outside of their normal auditory range. Therefore, behavioural impacts would be highly localised. PTS or TTS is not considered to be credible given the rapid attenuation of sound close to the source and a large proportion of the sound energy is produced at frequencies outside the peak hearing frequency range of fish.

Transponders used for positioning during IMMR activities typical operate at frequencies of 21 to 31 kHz which is well outside the hearing frequency range of fish. Therefore, no impacts are considered credible.

Summary

Potential impacts from predicted noise levels from the facility, support vessels and IMMR activities are not considered to be ecologically significant at a population level, with no lasting effect to fish, sharks or rays.

Values and Sensitivities

Ancient Coastline at 125 m Depth Contour

The Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF. No significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with this KEF have been observed in the Operational Area (Section 4.7). As evaluated above, impacts to marine fauna from acoustic emissions are localised, with no population level impacts expected. Therefore, potential impacts to this regional-scale KEF will be localised with no lasting effect.

Montebello Marine Park

While the Operational Area overlaps the Montebello Marine Park, GWA subsea infrastructure does not. As evaluated above, impacts to marine fauna from acoustic emissions are localised, with no population level impacts expected. Therefore, potential impacts to marine park values will be localised with no lasting effect.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[29]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2025 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[30]: • support vessels will not travel greater than 6 knots within	F: Yes. CS: Minimal cost. Standard practice.	Implementation of this control is primarily intended to reduce interaction risk. However, implementation may also provide some reduction in the potential for exposure	Legislative requirements – must be adopted.	Yes **C 4.1**

[29] *Qualitative measure*

[30] *For safety reasons, the distance requirements below are not applied for a vessel holding station or with limited manoeuvrability e.g. anchor handling, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[29]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • support vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the potential of animals bow riding). • If the cetacean shows signs of being disturbed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.		to sound levels in direct proximity to vessels.		
Vessels will comply with Biodiversity Conservation Regulations (WA) 2018 for whale shark speed control and separation distances: • vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel.	Benefits outweigh cost/sacrifice. Good practice.	Yes **C 4.2**
Good practice				
Vary the timing of the Petroleum Activity to avoid migration periods.	F: No. The Petroleum Activity occurs continuously over a 5- year period. Modifying the timing of the Petroleum Activity is not feasible. CS: Not considered, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible	No
Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw	F: Yes. CS: Minimal cost. Standard practice.	Implementation of this control is primarily intended to reduce interaction risk. However, implementation may also provide some reduction in the	Benefits outweigh cost/sacrifice. Good practice.	Yes **C 4.3**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[29]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
from the caution zone at a constant speed of less than 6 knots.		potential for exposure to sound levels in direct proximity to vessels.		
Implementing a shutdown zone around MBES for the following fauna: • whales • marine turtles • whale sharks.	F: Yes. However, as equipment is underwater, effective implementation of zones is challenging from topside observation. CS: Moderate. Requires the provision of a dedicated and suitably trained crew member to undertake Marine Fauna Observations.	Limited. The areas of disturbance for these devices are limited, and injury/PTS/TTS is not expected to occur. In addition, it is noted that for MBES, the frequency range of these devices are outside the estimated frequency hearing range of identified protected species (whales, turtles and whale sharks).	Acoustic MBES and sub-bottom profiler surveys are infrequently conducted (every 1 to 6 years) as part of the Petroleum Activity. The source levels and frequency range of these devices are mostly outside the estimated frequency hearing range of identified protected species (whales, turtles and whale sharks), so costs are considered disproportionate to benefits.	No
Have a dedicated experienced and trained Marine Fauna Observer (MFO) onboard vessels to undertake marine fauna observations.	F: Yes, however additional cost for dedicated and experienced MFO to be present during IMMR CS: Moderate, requires the provision of a dedicated experienced MFO to undertake Marine Fauna Observations.	Use of an MFO may detect fauna in the area, however control provides limited benefit when managing impacts associated with vessel noise alone.	Given limited benefit associated with the management of vessel noise impacts and costs associated with control implementation an experienced MFO is not considered necessary.	No
Professional judgement – Eliminate				
Eliminate the use of DP on vessels during the Petroleum Activity.	F: No. Both PSVs and subsea support vessels are required to reliably hold station during the Petroleum Activity. Failure to do so may lead to loss of separation between vessels and infrastructure. This would result in unacceptable safety and environmental risk (loss of vessel separation has been identified as a MEE-05 – Section 6.8.7). CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional judgement – substitute				
None Identified				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[29]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Professional judgement – engineered solution				
Application of bubble curtains to reduce noise propagation.	F: No, Bubble curtain installation and operation in offshore open water not feasible due to technical operation constraints i.e. water depth/current.	Not considered, control not feasible.	Not considered, control not feasible.	No
ALARP statement: On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), the adopted controls are considered appropriate to manage potential impacts from routine acoustic emissions generated by the Petroleum Activity. As no reasonably practicable additional or alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, routine acoustic emissions from the Petroleum Activity are limited and do not affect population-level processes or ecosystem function. Any impacts are predicted to have no lasting effect. On the basis of the assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), the adopted controls are considered appropriate to manage the impacts to a level that is broadly acceptable. Compliance with these controls demonstrates that the EPOs are met.

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EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 4a No injury of, or mortality to, EPBC Act 1999 listed marine fauna as a result of noise generated by the Petroleum Activity. **EPO 4b** No displacement of marine turtles from habitat critical during nesting/breeding (incl internesting periods for turtles) and ensure biologically important behaviour can continue in biologically important areas.	**C 4.1** EPBC Regulations 2025 – Part 8 Division 8.1 Interacting with cetaceans, which include the following measures[31]: • vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • if the cetacean shows signs of being disturbed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	**PS 4.1** Vessels will comply with the EPBC Regulations 2025 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans to manage the risk of fauna collision.	**MC 4.1.1** Records demonstrate no breaches of EPBC Regulations 2025 – Part 8 Division 8.1 **MC 4.1.2** Records demonstrate reporting cetacean ship strike incidents to the National Ship Strike Database.
	C 4.2 Vessels will comply with Biodiversity Conservation Regulations (WA) 2018 for whale shark speed control and separation distances: • vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	**PS 4.2** When within 250 m of a whale shark, vessels do not travel faster than 6 knots nor approach within 30 m.	**MC 4.2.1** Incident reports are raised for breaching speed or distance requirements in relation to whale sharks.
	C 4.3 Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	**PS 4.3** When within 300 m of a turtle, vessels will not travel greater than 6 knots.	**MC 4.3.1** Records demonstrate no breaches of speed requirements when within 300 m of a turtle.

[31] For safety reasons, the specified distances requirements are not applied for a vessel holding station or with limited manoeuvrability (e.g. loading back-loading, close standby cover for overside working and emergency situations).

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6.7.4 Routine and non-routine discharges: hydrocarbons and chemicals during subsea operations and activities

Context		
Subsea components – Section 3.5.2 Bulk hydrocarbon inventories – Section 3.6.9 Indicative chemical inventories – Section 3.7.10.4 Subsea inspection, monitoring, maintenance and repair activities – Section 3.7 Platform well management and maintenance – Section 3.9	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Discharge of subsea control fluids.	✓	✓		✓			A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 5
Discharge of hydrocarbons remaining in subsea pipework and equipment as a result of subsea intervention works (including pigging).	✓	✓		✓									
Discharge of chemicals remaining in subsea pipework and equipment or the use of chemicals for subsea IMMR activities and platform well maintenance and management.	✓	✓		✓									
Discharge of cement slurry during platform well management and maintenance	✓	✓		✓									
Discharge of minor hydrocarbons from subsea equipment.		✓											

Description of source of impact

Hydrocarbons and chemicals may be discharged during routine and non-routine operations and activities. Discharges associated with subsea operations may include:

- subsea control fluids used to remotely operate valves. The system is open-loop and designed to discharge small volumes of fluids during valve actuation
- non-routine hydraulic fluid discharge associated with subsea equipment losses (e.g. weeps) minor hydrocarbon discharges associated with subsea equipment (e.g. gas bubbles)
- chemicals introduced into subsea infrastructure and the production stream (e.g. corrosion inhibitors, biocides, scale inhibitors), with residual chemicals discharged as a component of the PW (assessed in Section 6.7.5).

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Discharges associated with IMMR and platform well management and maintenance activities (described in Section 3.7.5.1 and Section 3.9) may include:

- residual hydrocarbons in subsea lines and equipment, and small gas discharges associated with barrier testing and breaking containment
- residual chemicals in subsea lines and equipment, and intermittent use of chemicals during activities such as Component replacement, SCMs, HFLs, etc, flushing and pigging and platform well management and maintenance
- excess cement slurry from platform well management and maintenances.

Subsea control fluids

Subsea control fluid is used to operate wellhead valves remotely from the GWA platform (Section 3.6.10). Control fluid is supplied via an open-loop system, which discharges small volumes during operation (e.g. valve actuation), typically up to approximately 2 m^3/day across the subsea system.

Additional discharges may occur during IMMR activities (e.g. leak detection or subsea control module change-out) (refer to Section 3.7.5.1).

Hydrocarbons

Hydrocarbon discharges associated with IMMR activities are described in Section 3.7.5.1 and may include small gas and condensate discharges during barrier testing or when breaking containment.

Hydrocarbon discharged from subsea infrastructure are typically buoyant, however, given the water depth, pressure, and small volumes discharged, they are unlikely to reach the sea surface and are expected to disperse and dissolve within the water column.

Chemicals

Chemicals may be introduced into subsea infrastructure and the production stream as process or non-process chemicals (e.g. corrosion inhibitors, biocides, scale inhibitors). Residual chemicals flow through the production process and are discharged as a component of the PW discharged overboard (refer to Section 6.7.5).

Chemicals may also be used intermittently during IMMR or well management and maintenance activities, with small volumes discharged following flushing and disconnection (Section 3.7.5.1 and Section 3.9). Cement may be required to install through tubing cement plugs on redundant dry tree platform wells. Any leftover cement slurry in the cement pump unit and the surface lines is flushed and discharged to the sea to prevent clogging of the lines and equipment. This activity may result in non-routine discharge of a small volume of excess cement slurry (~ 5 m^3 per plug).

The use of operational chemicals is limited to that required to complete the activity, and all chemicals are selected in accordance with the chemical selection process described in Section 7.2.3 (refer also **C 5.1**).

Impact assessment

Environmental value(s) potentially impacted

There is potential for localised water column contamination and associated effects on marine biota as a result of planned routine and non-routine hydrocarbon and chemical discharges. However, these discharges are minor and are minimised as far as practicable (e.g. though flushing of lines back to the platform where feasible). Discharge locations are subsea valves (subsea control fluids), disconnection points in subsea infrastructure, surface discharge of well maintenance fluids such as excess cement slurry and the PW stream.

Water quality

Subsea control fluids are discharged at relatively small volumes during valve actuations and IMMR activities at or near the seabed. Once discharged, control fluids are expected to disperse and dilute within the water column.

Small quantities of hydrocarbons (liquid and gas) may be discharged during operational and IMMR activities (including pigging) that involve barrier testing and breaking containment of isolated subsea infrastructure. These discharges are typically buoyant and will rise within the water column, however, given the water depth, pressure, and small volumes involved, they are not expected to reach the sea surface and are expected to disperse and dissolve within the water column. Chemicals may be discharged intermittently and in small volumes. Cement discharge may result in localised turbidity in the water column, however any reduction in water quality will be temporary and subject to rapid dispersion and dilution by prevailing currents.

Accordingly, there is potential for short-term, localised decrease in water quality at planned discharge locations. Impacts to pelagic species including planktonic organisms are expected to be limited to localised and short-term avoidance or decline in the immediate vicinity of the discharge location with no lasting effect.

Sediment quality

Accumulation of contaminants in sediments is influenced by discharge volume and concentration, the potential for adsorption to particulates, the area over which particulates may settle (influenced by current and water depth), and subsequent resuspension, bioturbation and microbial degradation.

Valve actuation discharges are frequent but very low in volume (approximately 2 m^3/day across the subsea system). The subsea control fluid used in the open loop system (HW443) is water-based and has an OCNS rating of D with a

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substitution warning associated with fluorescein dye (~150 ppm) due to its low biodegradability. However, the product is considered non-toxic and is not expected to bioaccumulate.

Once discharged, control fluids are expected to disperse and dilute rapidly within the water column, and accumulation in sediments is not considered likely.

Given the small volumes and buoyant nature of hydrocarbon discharges, impacts to sediment quality are not expected.

Impacts of cement on the marine environment are associated mainly with smothering of surrounding benthic and/or infauna communities. Cement is the most common material currently used in artificial reefs around the world (Carral et al., 2020) and is not expected to pose any toxicological impacts to receptors from leaching or direct contact. The potential impacts to sediment and benthic communities caused by smothering from a surface release of cement are expected to be minimal due to the high dispersal by ocean currents and short-term duration of these discharges.

Benthic habitats

Benthic habitats within the Operational Area are expected to be broadly consistent with the NWS Province, comprising sparsely populated silty and sandy sediment (Section 1.1). Filter feeders (e.g. sponges, ascidians, soft corals and gorgonians) are typically associated with hard substrates, which in the Operational Area are limited to artificial habitat structures associated with subsea infrastructure.

Three shoals occur within or near the Operational Area:

- Unnamed Shoal – water depths of 40-50 m, located within the Operational Area and 1.9 km from the nearest flowline
- Wilcox Shoal – water depths of 25-80 m, located 2.4 km from the Operational Area.
- Rankin Bank – water depths of ~18-30.5 m, located 3.7 km from the Operational Area

Shoals are typically characterised by shallower water and hard substrates that may support more diverse benthic assemblages. However, given the distance of these features from discharge locations, no lasting effects to the values and sensitivities of shoals are expected.

Impacts to benthic habitats, including shoals, are expected to be localised with no lasting effects.

Values and sensitivities

Ancient Coastline at 125 m Depth Contour (KEF)

The Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF, however, no significant escarpments, emergent features, areas of high productivity or species of conservation significance have been identified within the Operational Area (Section 4.7).

Given the limited spatial extent of a changes in water or sediment quality from subsea discharges (typically within tens of metres), potential impacts to this regional-scale KEF are expected to be localised with no lasting effects.

Montebello Marine Park

While the Operational Area overlaps the Montebello Marine Park, subsea infrastructure does not.

Given the limited spatial extent of a changes in water or sediment quality from subsea discharges (typically within tens of metres), potential impacts to the marine park are expected to be localised with no lasting effects.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
None identified				
Good practice				
Chemical Selection and Assessment Environment Guideline: • where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • if chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	F: Yes. Woodside routinely implements a chemical selection process based on OCNS at GWA. CS: Minimal. The OCNS is widely used throughout the industry, and chemical suppliers are aware of the requirements of the scheme.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Woodside's chemical selection process is used to ensure fluids discharged meet Woodside's chemical environmental risk assessment standards while still providing the required technical capability.	Yes **C 5.1**
Subsea infrastructure is flushed, where practicable, during IMMR disconnection activities to reduce the volume and concentration of hydrocarbons discharged to the environment.	F: Yes. Subsea infrastructure has been designed such that much of the hydrocarbon-containing fluids can be flushed back to the GWA platform. CS: Minor. Flushing may prolong the cessation of production required for subsea IMMR activities, leading to reduced production.	Flushing reduces the volumes and concentration of hydrocarbons discharged to the environment.	Benefit outweighs cost/sacrifice.	Yes **C 5.2**
Monitoring subsea control fluid use, investigate material discrepancies, and using control fluid with dye marker, to support identification of potential integrity failures.	F: Yes. The use of control fluid is monitored to maintain adequate fluid in the system. CS: Minimal cost.	Limits the volumes of subsea control fluid discharged to the marine environment.	Benefit outweighs cost/sacrifice.	Yes **C 5.3**
Implement Woodside Engineering Operating Standard – Subsea Isolation. Proven isolation in place for relevant IMMR activities.	F: Yes CS: Minimal cost. Standard practice.	Maintaining and testing the ability to isolate wells and pipelines will ensure barriers are in place and verified, thereby limiting the volume of hydrocarbon discharged.	Control is a WMS requirement – must be adopted.	Yes **C 5.4**

[32] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Test manifold and PLET isolation valves prior to flowline tie-ins	F: Yes. CS: Minimal cost. Standard practice.	Testing of the isolation valves will provide a valve pass rate to be used to assess isolation requirements and determine the isolations required to confirm to the relevant internal Woodside standards.	Benefits outweigh cost/sacrifice.	Yes **C 5.5**
Subsea isolations conform to the relevant internal Woodside standards which include: • Using a double block isolation • If it is not practicable to establish a double block isolation, then one effective, proven and monitored barrier (single block isolation) shall be in place, with the following conditions: o It must be possible to isolate the reservoir by remote operation of tree isolation valves o The residual risks must be shown to be ALARP by a documented isolation risk assessment. o Procedures and response plans for the activity must be developed and implemented and address all applicable hazards appropriately, including provision for closing tree isolation valves	F: Yes. CS: Minimal cost. Standard practice.	Pass rate (to be determined during detailed engineering) across valve with proven single block isolation. Conditions for single block isolation reduce the likelihood and consequence of an uncontrolled release	If valve testing confirms proven barrier, slight environmental impact associated with hydrocarbon release is disproportionate to requirement to shut in wells over a number of days to achieve double isolation. Benefit for additional conditions for single isolation outweigh cost.	Yes **C 5.6**
Professional judgement – eliminate				
None identified				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Professional judgement – substitute				
Installing closed-loop subsea valve control system.	F: Yes. Closed-loop subsea valve control systems can be installed; however, they may not perform as reliably as open-loop systems. CS: Significant. The design, procurement and retrofitting of a closed-loop valve control system would result in considerable offshore logistics, exposure to safety hazards during installation, and significant financial burden through direct costs and lost production.	The potential consequence of the discharges is ranked as incidental, based on the volume, frequency, location, and types of fluid discharged in an open-ocean environment, and avoiding the discharges would provide little or no environmental benefit.	When considering the very low environmental impact associated with control fluid discharges, the risk and costs of retrofitting a closed-loop subsea valve control system is considered to be grossly disproportionate to the environmental benefit.	No
Professional judgement – engineered solution				
Routing hydrocarbons to vessel during disconnection of subsea infrastructure.	F: Not reasonably practicable. While technically possible in some circumstances, routing or recovery of hydrocarbons to support vessels would introduce significant additional safety risks to vessel crew including fire, explosion and asphyxiation hazards. In addition, the safety cases of some IMMR vessels (e.g. Fugro Etive) do not permit routing or recovery off hydrocarbons to the vessel. CS: Significant. Modification to vessel systems, additional equipment, specialist operating procedures and training would be required, in addition to management of increased safety risk.	Limited additional environmental benefit due to the low volume and low concentration nature of hydrocarbon discharges associated with subsea IMMR activities.	Given the increased safety risks, vessel limitations and the limited additional environmental benefit, the cost and risk associated with routing hydrocarbons to the vessel are grossly disproportionate to the potential environmental benefit.	No
Decreasing the frequency of valve actuation.	F: Yes. However, decreasing the frequency of valve actuation may adversely impact the safe functionality and reliability of valves. Reducing the performance of subsea valves may introduce operability impacts, and increased safety and environmental risk associated with loss of containment events. CS: Minimal cost.	The potential consequence of the discharges is ranked as incidental, based on the volume, frequency, location and types of fluid discharged in an open-ocean environment, and reducing the number of discharges would provide little or no environmental benefit.	Decreasing the frequency of valve actuations would lead to a potential decrease in safe functionality and reliability of valves. When considering the potential safety and environmental risks from such a performance degradation,	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[32]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
			along with the minor impact from discharge of control fluids, the cost of decreasing the frequency of valve actuations is considered to be grossly disproportionate to the environmental benefit.	
Substitute subsea control fluid HW443 with less hazardous alternative	F: No, chemical substitution assessment of three alternative subsea control fluids concluded that change is not feasible. CS: Not assessed, as not feasible.	Not assessed, as deemed not feasible. Even if an alternative were feasible, there would be little reduction in impact given the already low toxicity of the product. Fluorescein dye drives the OCNS substitution warning and is required to support leak detection and IMMR troubleshooting.	Not assessed, as deemed not feasible. Even if it was feasible, a substitution would be of little benefit.	No
ALARP statement: On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type, (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), the adopted controls are considered appropriate to manage the impacts of planned routine and non-routine discharges during subsea operations and IMMR activities. As no reasonable additional or alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, routine and non-routine discharges during subsea operations and IMMR activities are expected to result in localised and short-term impacts to water quality, sediments and benthic habitats, with no lasting effect on ecosystem function. On the basis of the assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), the adopted controls are considered appropriate to manage the impacts to a level that is broadly acceptable. Compliance with these controls demonstrates that the EPOs are met.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 5 Routine and non-routine discharges from subsea operations and IMMR activities are limited to those described for the Petroleum Activity.	**C 5.1** Chemical Selection and Assessment Environment Guideline: • where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • if chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	**PS 5.1** All operational chemicals intended or likely to be discharged to the marine environment are assessed and approved prior to use in accordance with the Chemical Selection and Assessment Environment Guideline (described in Section 7.2.3), to ensure impacts are ALARP and acceptable.	**MC 5.1.1** Records demonstrate that the chemical selection, assessment and approval process for operational chemicals has been followed.
	C 5.2 Subsea infrastructure is flushed, where practicable, during IMMR disconnection activities to reduce the volume and concentration of hydrocarbons discharged to the environment.	**PS 5.2** Subsea infrastructure containing hydrocarbons flushed to the platform, where practicable, prior to disconnection, to a concentration at which further reduction provides disproportionate cost to environmental benefit.	**MC 5.2.1** Records demonstrate subsea infrastructure has been flushed to the platform, where practicable, prior to disconnection.
	C 5.3 Monitoring subsea control fluid use, investigating material discrepancies and the use of control fluid with dye marker, to support identification of potential integrity failures.	**PS 5.3** Subsea control fluid use monitored and, where losses are unexplained, relative to expected usage trends (dependent on operational demand for system activation), potential integrity issues are investigated.	**MC 5.3.1** Records demonstrate that subsea control fluid use is documented, and unexplained discrepancies investigated.
	C 5.4 Implement Woodside Engineering Operating Standard – Subsea Isolation. Proven isolation in place for relevant IMMR activities.	**PS 5.4** Proven isolation in place in accordance with the Woodside Engineering Operating Standard – Subsea Isolation.	**MC 5.4.1** Records demonstrate that proven isolation was in place as required.
	C 5.5 Test manifolds and PLET isolation valves prior to flowline tie-in	**PS 5.5** Valve testing undertaken prior to flowline tie-in.	**MC 5.5.1** Records demonstrate testing of isolation valves is completed.
	C 5.6 Subsea isolations conform to the relevant internal	**PS 5.6** Subsea Isolations implemented conform with the relevant internal	**MC 5.6.1** Records demonstrate isolations are implemented and compliant with the

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	Woodside standards which include: • Using a double block isolation • If it is not practicable to establish a double block isolation, then one effective, proven and monitored barrier (single block isolation) shall be in place, with the following conditions: ○ It must be possible to isolate the reservoir by remote operation of tree isolation valves ○ The residual risks must be shown to be ALARP by a documented isolation risk assessment. ○ Procedures and response plans for the activity must be developed and implemented and address all applicable hazards appropriately, including provision for closing tree isolation valves.	Woodside standards and any single isolation will have a proven barrier (pass rate to be determined during detailed engineering).	relevant internal Woodside standards. **MC 5.6.2** Where a single isolation was used records demonstrate that during testing of valves the pass rate was within the acceptable limit and the estimated pass rate is documented.

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6.7.5 Routine and non-routine discharges: produced water

Context		
Produced water system – Section 3.6.3 Platform well management and maintenance – Section 3.9 GWF4 and future tie-in production well commissioning - Section 3.10	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key Ecological Features – Section 4.7 Protected places – Section 4.8	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Discharge of PW during routine and non-routine operations.	✓	✓		✓	✓		B	E	-	-	LCS GP PJ RBA	Acceptable, if ALARP	EPO 6

Description of source of impact

Produced water (PW) is formation water (water reservoir below the hydrocarbon) or condensed water (vapour within gas/condensate that condenses), or a combination of both. Separation of formation water from reservoir fluids is not 100% effective and separated formation water often contains small amounts of naturally occurring contaminants including:

- organic compounds: dispersed oil, dissolved aliphatic and aromatic hydrocarbons, organic acids and phenols
- inorganic compounds: soluble salts and metals
- residual process chemicals.

These contaminants vary depending on reservoir characteristics, production history, and operational processes, as shown in Table 6-11.

Table 6-11: Contaminant characterisation and variability

Contaminant	Typical range	Monitoring method
OIW	<30 mg/L under normal operations	Online analyser/manual sampling
Hydrocarbons (BTEX, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), total recoverable hydrocarbons (TRH))	Low ppm concentrations, varies with reservoir and process	End-of-pipe chemical and ecotoxicity analysis
Metals	Detectable at low concentrations (near limits of laboratory reporting or guideline values). Low risk	End-of-pipe chemical and ecotoxicity analysis

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	non conservative tracers (e.g. barium, iron) at higher concentrations and able to be traced after dilution. Vary with reservoir	
Organic acids, phenols	Low concentrations, present in formation water	End-of-pipe chemical and ecotoxicity analysis
Process chemicals	Minor, dependent on operational use	Individual chemical assessments End-of-pipe chemical and ecotoxicity analysis

A description of the PW system has been provided in Section 3.6.3.

Discharge volumes

PW discharge is expected to continue for the duration of this EP with PW discharge averaging 341 m^3 per day over 2025. Historically, daily PW discharge volumes have ranged from a high of ~4,500 m^3/day (common before 2014) to much lower volumes (<1,000 m^3/day) since 2022 (Figure 6-1).

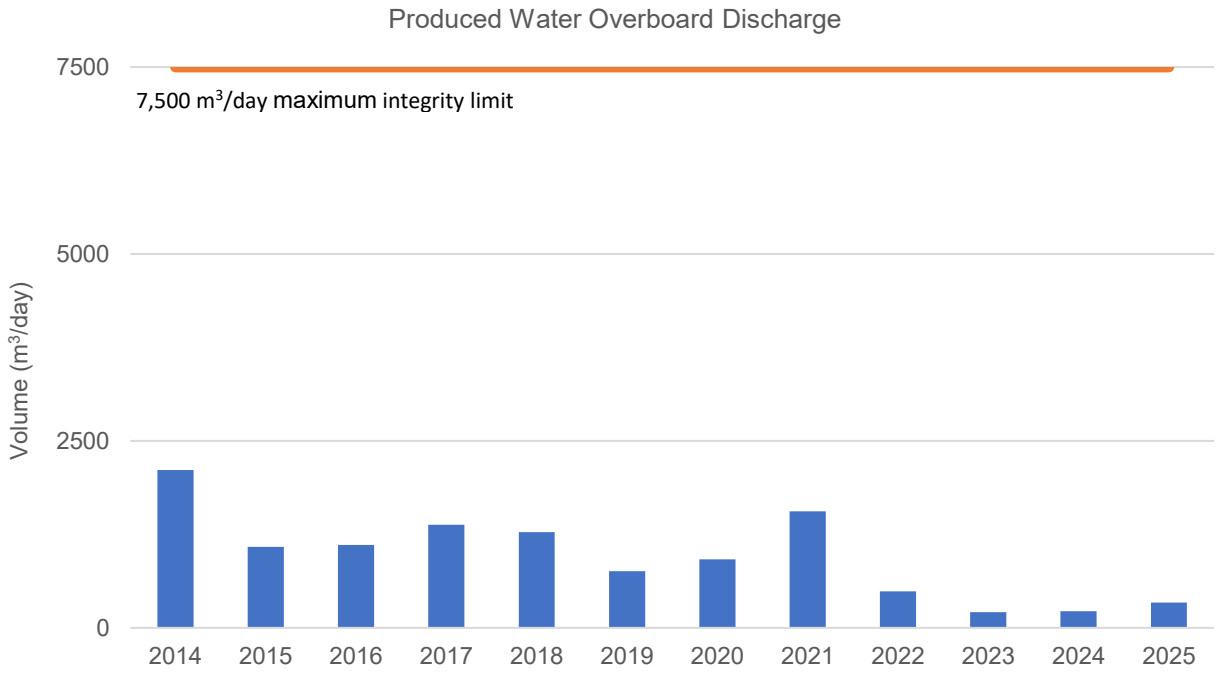


Figure 6-1: Historical average daily PW discharge volumes

PW rates are expected to increase as the fields mature, new fields are tied-in and production from high water cut wells is managed. The PW system has a maximum design capacity of 7,500 m^3/day although average daily discharge rates are expected to remain well below this value over the near term. The environmental assessment adopts the maximum design discharge rate as a conservative upper operating case to demonstrate that environmental impacts remain acceptable across the full operating envelope of the PW system over the life of the EP.

Monitoring and management framework

Overview

This section describes the monitoring and management framework that Woodside has developed to support the monitoring of PW discharges from offshore assets, including verification that discharge quality and volumes remain within the bounds assessed in the environmental impact assessment. The monitoring and management framework comprises of:

- operational monitoring of OIW
- produced water routine monitoring.

Further details are provided in Section 7.2.6 which describes Woodside's Offshore Marine Discharge Adaptive Management Plan (OMDAMP). The monitoring and management of PW will be implemented in accordance with the OMDAMP which details guidelines (ANZG 2018) for water and sediment quality monitoring including chemical assessments (metals, BTEX, PAH, phenols, organic acids, TPH and TRH), and ecotoxicity testing.

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Oil-In-Water - operational monitoring

OIW monitoring is undertaken via an online analyser to support management of the PW discharges within the environmental envelope. Online analyser information is transmitted to the distributed control system (DCS) and captured within the process historian database (PHD). The DCS provides visibility in the control room to support manual or automated process control actions, operational oversight and alarm management (e.g. high OIW alarms). PHD information is also available onshore for analysis and trending.

Manual sampling occurs if the online analyser is unavailable or there is a lack of confidence in the data. Manual sampling is undertaken during regular intervals when online analysers are unavailable, if safe and practicable. Manual sampling results are recorded and managed through an Operator Proactive Monitoring (OPAM) process and uploaded to the production allocation system, to support production and environmental reporting.

Historical operational data from GWA facility demonstrates that, during routine production, OIW concentrations are typically maintained below the 30 mg/L rolling 24-hour limit. This provides confidence that the PW treatment system has demonstrated effective performance within the assessed environmental envelope.

Short-term elevation in OIW concentrations may occur due to natural variability in PW characteristics, process restarts (including planned well unloading and well cycling activities), changing well contributions or operational adjustments. These events can occur over short timescales, and the available response window for process adjustments may be limited. The 30 mg/L rolling 24-hour limit, together with the defined operating envelope for planned well unloading and well cycling activities, supported by online monitoring, secondary analyser monitoring, and DCS control, provides an effective and practicable control framework for managing this operational variability.

Routine monitoring

The monitoring and management framework is implemented in accordance with the OMDAMP provided in Section 7.2.6), which details routine monitoring assessment against guideline values (ANZG 2018), analytical methods, and actions when a trigger value is exceeded which effectively reduce impacts to ALARP and acceptable levels.

Monitoring of produced water based on the OMDAMP consists of end of pipe samples for annual chemical characterisation, WET testing to assess toxicity every three years, and monitoring of overboard discharge volumes to ensure PW characteristics are within the modelled parameters and impact assessment. PW samples should represent normal operations and be undertaken during periods of normal routine production at the facility. Where practicable, samples are taken at a time when all (or as many as reasonably possible) PW-producing wells are online.

The guideline values are applied through a risk-based approach that is intended to capture uncertainty around the level of impact by staging monitoring and management responses according to the degree of risk based on multiple lines of evidence. Routine monitoring applicable to the facility, is undertaken to compare against trigger values (described in Table 6-12). Changes in water quality can be detected early and can indicate the potential for an impact to biota and sediment prior to it occurring. Single species toxicity and Whole Effluent Testing (WET) provide additional lines of evidence if to test if there is a potential for impacts to biota.

Results of chemical characterisation and WET testing are compared against OMDAMP trigger values, and any exceedances of trigger values are investigated as part of a multiple lines of evidence approach to determine the potential for an impact. If the trigger value has been exceeded, a review of single species toxicity testing is immediately conducted, operational management actions will be implemented as appropriate to reduce risk and additional WET testing may be completed as required. If risks of impact to the environment outside of the mixing zone are possible in situ field sampling may be initiated as per of the OMDAMP response actions. Monitoring will be conducted in accordance with the OMDAMP where rigorous monitoring triggers, methods and appropriate scientific standards are applied to ensure consistency and comparability of data.

Ecological protection level and trigger values

The guidelines for 99% species protection have been adopted for the approved mixing zone boundary and relevant trigger values are presented in Table 6-12 and the OMDAMP. An approved mixing zone of 1200 m has been determined (described further below) based on produced water dispersion modelling and toxicity testing which predicts the protection of 99% of species, as calculated using the ANZG (2018) statistical distribution methodology on the results of direct toxicity assessment. The protection of 99% of species maintains a high level of ecological protection at the boundary of the approved mixing zone.

Table 6-12: Trigger values and frequency of routine monitoring

Parameter	Trigger Values	Frequency
Chemical characterisation: physiochemical and toxicants	Results that are predicted to be higher than the 99% species protection guideline value at approved mixing zone boundary and are above the results from the earlier toxicity year[1] or above the toxicity year when no guideline was available.	Annual
WET testing	The 99% species protection safe dilutions derived from the WET testing species sensitivity distributions are not predicted to be achieved at the	Every three years, conducted in parallel with annual chemical

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	boundary of approved mixing zone and are higher than previous years.	characterisation where feasible.
Review of continuous operational OIW monitoring results	Increases in the average monthly OIW concentration by 5 mg/L for more than six consecutive months or by 10 mg/L for two consecutive months	Monthly review
Discharge Volume	Monthly mean discharge volume (m^3/day) is equal to or less than the modelled flow rates used to confirm 99% species protection can be met at the approved mixing zone.	Monthly review

Note 1: earlier toxicity year means the year in which the most recent WET test occurred.

Determination of approved mixing zone

To determine the potential impact of the PW to the marine environment, dispersion modelling was conducted to predict the distance at which 99% species protection level (SPL) safe dilutions are achieved, using WET testing results available to reflect the potential toxicity. A modelling study was carried out in 2018 and informs this impact assessment in relation to the determination of the approved mixing zone (Jacobs 2018).

Model simulations of dilutions were undertaken for three main seasons prevalent on the NWS, based on measured current and wind data. Ocean current data was collected at multiple depths through the water column. As the modelling of ocean current speed and direction varies substantially within each season, the full current records were analysed to select periods typical of the three seasons on the NWS but erring on the side of low current speeds to give conservative model results (Jacobs 2016).

The 2015 WET testing results were used to develop predicted no-effect concentration (PNEC) values, that were inputs to the model. The 2015 WET testing results have been used as they are historically the most conservative. The four-day PEC (Predicted Effects Concentration) value is used to determine the PEC/PNEC ratios and the distances from the discharge point at which 99% species protection safe dilutions (PC99) are achieved, based on a maximum discharge rate (7,500 m^3/day). The modelling shows a surface-buoyant plume that is readily diluted to 99% SPL safe dilution within 1200 m of the discharge location under worst-case conditions at maximum discharge rates. In 2025, PW discharge averaged 341 m^3 per day but PW rates may increase as the field ages and as further high water cut wells are produced. Therefore, it is proposed to maintain a 1200 m approved mixing zone to reflect 99% SPL safe dilutions at the maximum potential discharge 7,500 m^3/day. WET testing has also been completed in 2020 and 2023, and confirmed that the required dilutions, based on the discharge volume are being achieved at the mixing zone boundary.

Field verification of dispersion modelling and PW plume tracking

Water quality surveys in 2015 and 2021 were focused on sampling the plume to verify the dilutions were achieved as estimated by the dispersion modelling and assessing in situ water quality against ANZG 99% SPL thresholds (BMT Oceanica 2015, BMT 2021). Discharge rates were approximately 1,500 m^3/day in 2014 and 2,560 m^3/day in 2021. Parameters sampled included TRH, BTEX, PAH, metals, organic acids, inorganics and nutrients, TSS, conductivity and temperature. During both surveys the PW plume was tracked by deploying three satellite tracker buoys, at the beginning of a tidal cycle, at the point of discharge and collecting water samples and conductivity, temperature and depth (CTD) profiles at set distances along the plume vector and along vectors at 90, 180 and 270 degrees of the main vector. This, in combination with the chemical characterisation data, which was collected from the facility at the time of deploying the tracker buoys, allowed for analysis of dilutions being achieved. In situ contaminant concentrations measured were compared against the contaminant concentration at the point of discharge to verify if dilutions were being achieved based on distance from the discharge point. Contaminants were below the limit of reporting (LOR) or indistinguishable from the background concentrations within 50 m of the GWA facility during both surveys demonstrating the rapid dilutions being achieved.

In addition to the standard water quality sampling, an autonomous underwater vehicle (AUV) (Slocum G2 Glider) was also used in 2015 which measured conductivity, temperature, depth (CTD), dissolved oxygen (DO), turbidity and coloured dissolved organic matter (CDOM) and a calibrated Turner C3 optical sensor for hydrocarbons throughout the water column in a grid pattern in and around the plume. The AUV was not able to detect a distinct PW plume.

During the 2021 survey, an autonomous underwater vehicle (AUV) (L3 HARRIS Iver-3) was also used which measured conductivity, temperature, depth (CTD), dissolved oxygen (DO), turbidity and fluorescent dissolved organic matter (FDOM) throughout the water column in a grid pattern in and around the plume. The AUV was not able to detect a distinct PW plume. These findings from the comprehensive surveys, which took samples at multiple water depths per site, support the modelled outputs and impact assessment that the required dilutions are rapidly being achieved, particularly in the near field from the discharge of PW at a depth of 51 m, and the dispersion modelling is adequately conservative.

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Impact assessment – routine PW discharge

Potential impacts of PW discharge include:

- changes to water quality
- toxicity to biota
- changes to sediment quality
- changes to Key Ecological Features (KEFs).

To understand potential impacts from PW discharges, Woodside has undertaken a suite of comprehensive in-situ testing and sampling related to PW discharges representing long-term operational periods at GWA and from its other offshore production facilities. The details of this testing and resultant understanding of potential environmental impacts are outlined below.

Potential impacts to water quality

PW is discharged via a caisson 51 m below sea level and forms positively buoyant jets which rise towards the surface. As mixing increases and buoyancy of the plume erodes, the rise towards the surface slows. On reaching the surface the plume collapses and spreads horizontally whilst mixing vertically downwards. Potential impacts to water quality have been assessed through chemical characterisation of PW, dispersion modelling and discharge volumes.

Chemical characterisation of PW (physio-chemical parameters and toxicants)

Historical monitoring provides confidence that impacts from PW discharge are highly localised and pose no lasting effects to environmental receptors. Samples of undiluted PW collected annually between 2011 to 2025 were analysed for key physio-chemical parameters and toxicants including: TRH, BTEX, PAH, metals, organic acids, inorganics and nutrients. In most cases results are below guideline values, or similar to the results of chemical characterisation when the previous year's WET testing was undertaken (i.e. previous toxicity year) and resulted in concentrations being below guideline values within the approved mixing zone of 1200 m after taking into account modelled dilutions.

PW analysis in 2025 confirmed that chemical composition is similar to previous years. All constituents achieved 99% species protection guideline values within the approved mixing zone, with aluminium requiring the highest number of dilutions at 148 (Worley 2025). Modelling predicts 10,908 dilutions would be achieved at the mixing zone boundary at the maximum design discharge rate (7,500 m^3/day). When compared to previous years, routine chemical characterisation undertaken in 2025, indicated a stable discharge with no additional non-routine monitoring triggered.

In-situ water quality surveys

In 2015 and 2021, in-situ water quality monitoring was undertaken concurrently with routine PW discharge monitoring. Results indicated that the physical influence of the PW discharge could not be detected in the water column (to 50 m water depth) at distances of ≥ 50 m from the discharge location (BMT Oceanica 2015, BMT 2021), confirming that impacts from planned PW discharges did not extend beyond the mixing zone.

During both surveys, drifters were deployed close to the facility to determine the prevailing current direction and PW plume direction. An autonomous underwater vehicle (AUV) measured conductivity, temperature, depth (CTD), dissolved oxygen (DO), turbidity and fluorescent dissolved organic matter (FDOM) throughout the water column. Water samples were collected along the prevailing current (0°) vector and at various water depths and distances away from the facility. Additional water samples were also collected along the 90°, 180° and 270° vectors. All water samples were analysed for hydrocarbons (total recoverable hydrocarbons [TRHs], benzene, toluene, ethyl benzene and xylene [BTEX], polycyclic aromatic hydrocarbons [PAHs] and phenols), dissolved and total metals, organic acids, non-metallic inorganics and nutrients, dissolved and total organic carbon (DOC and TOC), total dissolved and solid suspended solids (TDS and TSS), chemical oxygen demand (COD), salinity, and electrical conductivity. Hydrocarbons (TRHs, BTEX and phenols) were not detected in receiving waters. Concentrations of dissolved and total metals were below all their available ANZG (2018) 99% species protection default guideline values (DGVs) at the approved mixing zone boundary. Measurable levels of organic acids and other non-metallic inorganics and nutrients were detected in the receiving waters. Water column profiles were consistent between sites, and uniform with a slightly lower temperature and conductivity at 50 m depth relative to the rest of the water column. The AUV did not detect a distinct PW plume.

Naturally occurring radioactive materials

PW may include low levels of naturally occurring radioactive materials (NORM) in particular, uranium 238 and thorium 232 decay chains and the longer-lived radionuclides lead 210, polonium 210, radium 226 (Ra-226) and radium 228 (Ra-228) (Coleman and West 2000). These radionuclides can occur in produced water either in solution or as fine mineral suspended solids.

Currently, there are no ANZG (2018) guidelines or international guidance for concentrations of radionuclides in marine water.

Valeur and Petersen (2013) assessed the ecological hazard-related NORMs in PW discharged to the marine environment. They concluded that NORMs have a strong affinity for particulate matter and discharged NORMs would be adsorbed onto fine grained sediments and particulate matter relatively soon after introduction to the marine

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environment. In high energy environments, NORMs associated particles would settle and resuspend numerous times until they eventually settle in low energy environments in deep parts of the sea that serve as accumulation areas for fine grained sediments. Over time these particles would be buried beneath the benthic mixing layer of the seabed where they will become isolated from the biosphere and are unlikely to exceed background levels.

Given the potential of radionuclides in PW from the GWA facility to adsorb to fine grained sediments, the approved mixing zone is deemed appropriate. Potential toxicity risk would be accounted for during regular WET testing to determine PW toxicity.

Residual process chemicals

Residual process chemicals may be present in the PW stream. Process chemicals are subject to Woodside's chemical selection and approval process. Chemicals will decrease the water quality in the immediate area of the release (i.e., surface waters at the release location); however, the consequence is expected to be temporary and localised due to dilution with the PW stream and the open ocean mixing environment, distance from sensitive receptors and relatively low and or non-routine discharge volumes.

Impact

Potential impacts to water quality are expected to be limited to the immediate vicinity of the discharge location with a slight and low-level impact effect on water quality. Within the approved mixing zone, potential impacts to pelagic fish are expected to be limited to avoidance of the localised area of the plume and short-term decline in planktonic organisms in the immediate vicinity of the discharge plume.

Potential impacts to biological indicators

Most treated PW has low to moderate toxicity (Neff et al. 2011), with actual toxicity of discharge dependant on the chemical constituents of the PW and any added process chemicals, the level of treatment and dilution with PW prior to release, and the dilution of the discharge as it mixes with sea water. Most hydrocarbons in PW are considered non-specific narcotic toxins with additive toxicities; therefore, the toxicity of a PW does, in part, depend on the total concentration and range of bioavailable hydrocarbons (Neff 2002). Potential impacts of PW to biota have been assessed through WET testing and dilution modelling to verify the approved mixing zone is being achieved.

WET testing

WET testing has been undertaken to allow for interactions between toxicants and take into account toxicants which cannot readily be measured or are not known to be present in the sample. A range of mainly tropical Australian marine species were selected based on their ecological relevance, known sensitivity to contaminants, availability of robust test protocols and known reproducibility and sensitivity as test species. Upon completion of WET testing, the results are combined into safe dilution estimates based on 99% SPL.

Routine WET testing has been completed in 2011, 2014, 2017, 2020 and 2023 (Table 6-13). The 2014 results required further investigation as an additional chronic toxicity test was included but concentrations of PW tested were not low enough to enable calculation of a reliable EC10 value. The test was repeated in 2015, and this result is considered as the credible worst-case toxicity and have been used to assess worst case potential impact of PW.

Table 6-13: Calculated 99% and 95% species protection guideline concentrations and corresponding safe dilutions from GWA

Year	99% Guideline Concentration and (Safe Dilutions)	95% Guideline Concentration and (Safe Dilutions)
2011	0.26 (390)	0.43 (230)
2014 / 2015	0.0085 (11,800)	0.11 (910)
2017	0.05 (2,000)	0.27 (370)
2020	0.15 (667)	0.24 (417)
2023	0.072 (1,338)	0.49 (205)

Bioaccumulation

Bioaccumulation refers to the amount of a substance taken up by an organism through all routes of exposure (water, diet, inhalation, epidermal). The Bioaccumulation Factor is the ratio of the steady-state tissue concentration and the steady-state environmental concentration (assuming uptake is from food and water). The test developed to measure the ability of a substance to bioaccumulate, namely, the octanol-water partition (Pow), is based on the preferential partitioning of lipophilic organic compounds into the octanol phase. Partitioning into octanol can be correlated with the attraction for such compounds to the fatty tissue (lipid) of organisms.

The most comprehensive field study assessing bioaccumulation of hydrocarbons and metals from PW discharged into offshore waters is that by Neff et al (2011). At the request of the U.S. Environmental Protection Agency (USEPA), the

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Gulf of Mexico Offshore Operators Committee sponsored a study of bioconcentration of selected PW chemicals by marine invertebrates and fish around several offshore production facilities discharging more than 731 m^3 per day of PW to outer continental shelf waters of the western Gulf of Mexico. The target chemicals identified by USEPA included five metals / metalloids (As, Cd, Hg, 226Ra and 228Ra), three volatile Monocyclic Aromatic Hydrocarbons (MAH), benzene, toluene, and ethylbenzene, and four semi-volatile organic chemicals (SVOC), phenol, fluorene, benzo(a)pyrene, and di (2-ethylhexyl) phthalate (DEHP). Additional MAH (m-, p-, and o-xylenes) and a full suite of 40 parent and alkyl-PAH and dibenzothiophenes were also analysed by Neff et al (2011) in PW, ambient water, and tissues at some facilities.

Concentrations of MAH, PAH, and phenol as determined by Neff et al were orders of magnitude higher in PW than in ambient seawater. There was no evidence of MAH or phenol being bioconcentrated. All MAH and phenol were either not detected (> 95% of tissue samples) or were present at trace concentrations in all invertebrate and fish tissue samples. Concentrations of several petrogenic PAHs, including alkyl naphthalene's and alkyl dibenzothiophenes, were slightly, but significantly higher in some bivalve molluscs, but not fish, from discharging than from non-discharging platforms. These PAH could have been derived from PW discharges or from tar balls or small fuel spills. Concentrations of individual and total PAH in mollusc, crab, and fish tissues were well below concentrations that might be harmful to the marine animals or to humans who might collect them for food at offshore platforms (Neff et. al. 2011).

The average concentration of BTEX in PW discharged from the GWA facility is approximately 15 mg/L (BMT 2021). Bioaccumulation of BTEX compounds has been observed to occur in the laboratory but at concentrations far in excess of that discharged from the GWA facility (refer to Berry 1980), hence it is unlikely that BTEX would bioaccumulate at the exposure concentrations that may be experienced by biota around the GWA facility.

In contrast to BTEX compounds, PAH compounds have high Pow values indicative of the potential for bioaccumulation (Vik et al 1996). Neff and Sauer (1996) reviewed the available literature for laboratory and field studies investigating the bioaccumulation of PAHs. The bioaccumulation values for PAHs in marine organisms collected near PW discharges in the Gulf of Mexico reported by Neff and Saur (1996) indicate that the highest bioaccumulation factor were in the tissues of bivalve molluscs and the lowest in the muscle tissue of fish.

Therefore, bioaccumulation is unlikely to result in increased levels of BTEX in biota surrounding the GWA, however, there may be an elevation in PAH levels. The results from Neff et al. (2011) can be used to infer the very low potential for adverse bioaccumulation effects to marine organisms, or to humans, if they were to consume any affected fish, molluscs or crabs found on upper near-surface legs of the facility. The potential environmental impact associated with bioaccumulation of PW constituents in the water column and in the sediments, is considered to be very low, and limited to a potential localised effect on a small number of non-threatened species in waters immediately surrounding the facility, as described below. Potential health risks are unlikely as a result of negligible exposure: the PSZ prohibits fishing from or near the facility as there is very little or no activity within the Operational Area. The findings of the sediment and water quality monitoring completed in 2015 and 2021 at GWA (BMT Oceanica 2015, BMT 2021) validated the conclusion that states, 'the potential environmental impact associated with bioaccumulation of PW constituents in the water column and in the sediments, is considered to be very low and limited to a potential localised effect on a small number of non-threated species in waters immediately surrounding each facility'. Given the nature of the PW discharge from the GWA facility, the potential for bioaccumulation of PW contaminants (in particular BTEX) is considered to be highly localised with no lasting effect.

Potential Impacts to EPBC Listed Species

Water depths in the Operational Area range between ~40-200 m. The fauna present is predominantly pelagic species of fish.

There are 50 EPBC listed species which may occur within the Operational Area, including whales, whale sharks, sharks, rays, dolphins, sea snakes, turtles and seabirds. These fauna species may include those associated with Traditional Custodians values. Key threats identified in species recovery plans and threat abatement assessment are outlined in Section 6.10. Marine fauna may be exposed to the PW plume for short periods while transiting through the Operational Area.

EPBC-listed marine species that have BIAs which overlap the Operational Area with 1,200 m of the GWA platform, include:

- whale shark foraging BIA.

In addition, the wedge-tailed shearwater breeding BIA and the flatback turtle internesting buffer BIA also overlap the Operational Area but not the PW approved mixing zone.

The Ancient Coastline at the 125 Depth Contour KEF overlaps the Operational Area including the location of the GWA platform.

Cetaceans

During PW overboard discharge, transient marine mammals may be exposed to elevated contaminant concentrations primarily through contact with the water column while transiting the Operational Area. Direct exposure may occur through ingestion of water or prey containing contaminants, while indirect effects could arise from temporary changes in prey availability or water quality within the mixing zone.

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Marine Turtles

While sensitive areas for the flatback turtle extend offshore, they primarily encompass foraging and internesting ranges of turtles that use adjacent coastal and island nesting beaches. The deep offshore environment of the Operational Area does not provide suitable nesting or benthic foraging habitat (i.e. no emergent islands, reefs, or shallow shoals), and therefore only low numbers of transient turtles are expected to occur near the facility. The nearest internesting buffer BIA is for the flatback turtle and is approximately 5 km from the GWA platform.

The Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017) identifies chemical discharges as a potential threat to turtles. However, any exposure of transient individuals to PW discharge would be limited to brief, surface contact within the approved 1,200 m approved mixing zone.

Overall, any interaction between PW discharge and marine turtles is predicted to result in no measurable impact at the individual or population level.

Whale Shark

The GWA platform is located within the known seasonal (July to November) foraging area (BIA) for the whale shark. Whale sharks typically migrate through the region during March to July and tend to travel as single individuals. As filter feeders, whale sharks primarily consume plankton. Therefore, there is a low probability of incidental feeding within highly diluted PW.

Modelling indicates that PW concentrations at the 1,200 m approved mixing zone boundary will meet 99% species protection criteria consistent with ANZG (2018) guidelines. Given the dispersive open-water environment, rapid dilution, and transient nature of whale sharks and other megafauna (including cetaceans, rays, and marine turtles), potential exposure durations are expected to be brief, and no measurable impact to individuals or populations is expected due to short contact times and low contaminant concentrations.

Fish

During PW discharge, fish in the Operational Area may be exposed to elevated contaminant concentrations through both direct and indirect pathways. The mixing zone does not overlap locations where site attached fish are likely (i.e. banks and shoals), therefore impacts would be limited to pelagic species. Direct exposure occurs when fish swim through the discharge mixing zone, resulting in uptake of contaminants across the gills or ingestion during normal feeding, and when benthic or demersal species come into contact with contaminants settling on the seafloor.

Indirect exposure may occur via dietary uptake of contaminated prey (e.g. zooplankton or benthic invertebrates) or through temporary alterations to habitat quality, including changes in water chemistry or prey availability. Predicted contaminant concentrations rapidly dilute beyond the mixing zone and remain below ANZG (2018) guideline values, limiting potential sub-lethal or population-level effects. Exposure is further mitigated through management of the discharge under the OMDAMP.

Seabirds

The GWA platform is located approximately 8 km from the breeding BIA for the Wedge-tailed shearwater, which supports colonies on offshore islands and associated offshore foraging habitat. Consequently, the likelihood of direct exposure through surface contact or ingestion is low. Indirect exposure through consumption of contaminated prey is also unlikely, as contaminant concentrations in the water column and biota are predicted to remain below levels that could cause sub-lethal or population-level effects. Overall, PW discharges is predicted to have negligible impact on individual birds or the breeding population, with discharge quality and environmental performance managed under the OMDAMP consistent with ANZG (2018) guidelines.

Fish communities and other fauna associated with the facility may experience minor, intermittent changes in local water quality as plume vectors shift, but effects are predicted to be localized and non-persistent. Overall, the activity is assessed as having no lasting or ecologically significant impact on whale sharks or other transient marine fauna, with discharges managed under the OMDAMP to ensure compliance with relevant environmental performance standards.

Plankton

A change in water quality as a result of PW and cooling water discharges has the potential to result in the injury or death of planktonic species within the water column through toxicity effects. Early life stages of fish (embryos, larvae) and other plankton would be the most susceptible organisms to exposure from hydrocarbons and chemicals in the discharges, as they have limited mobility and are therefore likely to be exposed to the plume, if present. Impacts are predicted to be limited to within 1,200 m of the discharge location and impacts are expected to be slight and low-level. These types of organisms are known to have high levels of natural mortality and a rapid replacement rate. Plankton is generally abundant in the upper layers of the water column and is the basis of the marine food web, so localised impacts in any one location are unlikely to have long-lasting impacts on plankton populations at a regional level. Reproduction by survivors or migration from unaffected areas is likely to rapidly replenish losses (Volkman et al., 2004).

Impacts to KEFs, Shoals and Banks, and AMPsThe Operational Area overlaps with the Ancient Coastline 125 m Depth Contour KEF, however, as PW forms a buoyant plume which does not reach the KEF depth, no contact and therefore no change in water quality at the KEF is expected from PW discharge.

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The nearest sensitive receptors are Rankin Bank and the Montebello Marine Park. Rankin Bank and the Montebello Marine Park are located approximately 33 km 45 km, respectively, from the GWA platform platform. Given the PW mixing zone is 1,200 m from the discharge location, no impacts to Rankin Bank or the Montebello Marine Park are expected (Figure 6-2). There are two other shoals within or close to the Operational Area, however they are not present within the approved mixing zone and hence no impacts are expected.

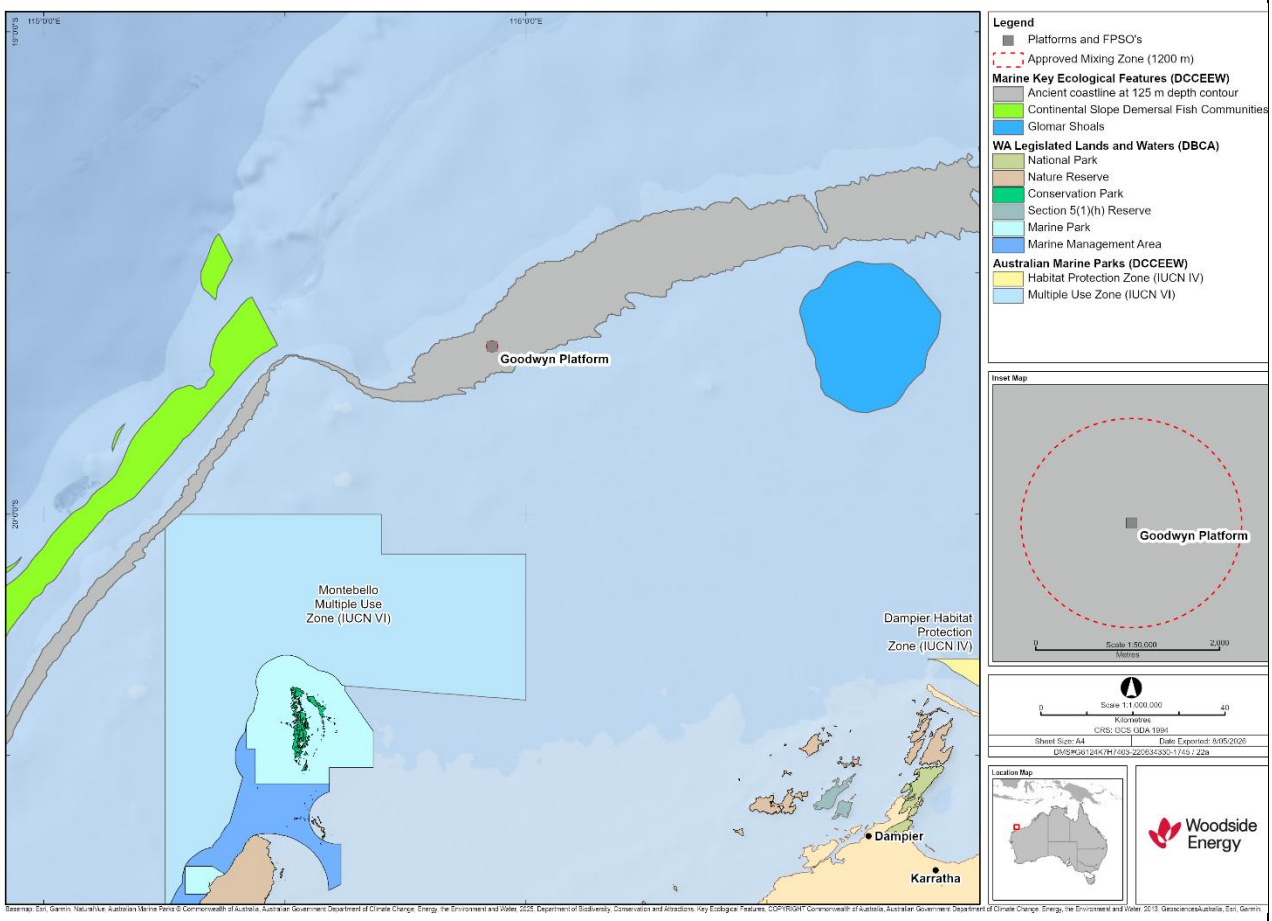


Figure 6-2: Produced water approved mixing zone relative to Australian marine parks and key ecological features

Potential impacts to sediment quality

Potential impacts to sediment quality have been assessed through historic sediment surveys and supported by the results of flocculation/precipitation studies and annual assessments of potential impacts to water quality (chemical characterisation).

Potential contaminants in the PW discharge may be introduced into sediments around the facility through precipitation of soluble contaminants and flocculation and sedimentation of the particles in the PW plume. Accumulation of PW contaminants in sediments depends primarily on the volume and concentration of particulates in PW discharges or constituents that adsorb onto seawater particulates, the area over which those particulates could settle onto the seabed (dominated by current speeds and water depths), and the re-suspension, bioturbation and microbial decay of those particulates in the water column and on the seabed. As described in the water quality section, the potential for PW to impact sediment, based on chemical characterisation of the discharge, is unlikely based to the concentrations observed.

Sediment studies

Studies into potential sediment precipitation, flocculation and accumulation from PW discharge have been undertaken by Woodside, including analysis of samples of PW from GWA (Jacobs 2016; BMT 2021). The Jacobs 2016 study found that the PW at GWA had very small amounts of solid material, with very little potential of settling out due to small particle sizes (100% particles <40 µm), and that it was unlikely to flocculate. The BMT 2021 study found similar results and that 95% of particles were <72 µm.

Based on settling velocities, particles < 5 µm would never permanently settle out of the water column, and that particles from 5 to 40 µm would not permanently settle out of the water column, unless they were in very deep water

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(>5000 m) or in areas where hydrodynamic conditions were very weak and did not continuously resuspend the particles (SKM 2013).

Historic field sediment surveys

In 2006 and 2014 sediment sampling was conducted at GWA to investigate impacts of historical water based and non-water-based drilling muds on sediment quality (SKM 2006; SKM 2014). Sampling found historical contamination with elevated levels of TPH, lead, zinc and mercury within 200 m of the GWA platform. Beyond 200 m from the GWA platform, TPH and metals concentrations were below ANZECC/ARMCANZ ISQG trigger values.

In 2015 and 2021 sediment sampling was conducted at GWA to verify if impacts to sediment were from PW discharges (BMT Oceanica 2015, BMT 2021). Sediment samples were collected both inside and outside the approved PW mixing zone (1200 m) to a maximum distance of 5 km from the platform. Beyond 400 m from the GWA platform, metals and hydrocarbon concentrations were consistent with background concentrations and well below ANZECC/ARMCANZ ISQG or ANZG 2018 trigger values, indicating no impacts to sediment due to PW discharges.

Impact assessment – non-routine PW discharge

Activities and discharges from production restarts, well commissioning, well cycling and well unloading are not part of the routine operations and routine discharges of produced water at GWA. To account for these non-routine operations an impact assessment was completed to assess for temporary short-term dispensations to the 30 mg/L 24 hour rolling average OIW threshold to allow for safe and successful operation during production restarts and bringing wells online to stabilise them.

During high water cut well unloading in 2019 and 2020, temporary elevated OIW concentrations between 30 mg/L and 100 mg/L (rolling 24 hr average) lasted several days, before stabilising below 30 mg/L during ongoing production. Well shut in periods prior to unloading varied from weeks to years and EPS established for non-routine activities were met.

During well commissioning activities, flowline preservation fluid, which is largely constituted of MEG will be produced back to the platform. MEG is known to have a 'cleaning' effect on the process vessels and equipment through which it travels, incorporating hydrocarbons that adhere to the flowlines and concentrating these in higher volumes, that are then required to be removed through the OIW treatment system. MEG is expected to be produced through GWA topsides within 24-48 hours of commissioning of each well, which may overwhelm the produced water condensate separator and other elements of the OIW treatment system. A temporary OIW polishing skid will be utilised during commissioning to assist with OIW management.

High water cut well unloading/cycling

Modelling was undertaken (RPC 2018) to predict where PEC/PNEC ratios are expected to be achieved during high water cut well unloading/cycling. In the model, OIW was discharged at 100 mg/L for 24 hours at a rate of 7,500 m^3/day. The modelling results demonstrated that the worst-case impact occurs during the transitional period, during which a PEC:PNEC ratio of 1 is achieved in 210 m, well within the approved mixing zone boundary. Refer Table 6-14 below for additional details.

Table 6-14: Modelled distance at which PNEC= 70 µg/L for PW discharged from GWA during well unloading/cycling is achieved (transitional period)

Discharge rate (m^3/day)	Peak OIW conc. at 200 m (ppm)	95%ile at 200 m (ppm)	24 hour average conc. at 200 m (ppm)	Maximum distance at which 70 µg/L PNEC achieved (i.e. PEC:PNEC = 1)
7,500	0.87	0.16	0.048	210 m

A PW sample collected during high water cut well unloading in 2019, while showing an increase in toxicity to previous samples, was considered to be within the range of the safe dilutions measured for the PW (Jacobs 2020), and not significantly different to previous years. The safe dilution estimate (1 in 3,100) for the 99% SPL was within the predicted dilutions (1 in 10,908) at the GWA approved mixing zone boundary (1200 m) for the modelled discharge rate of 7500 m^3/day, indicating impacts from PW discharge during high water cut well unloading remain within the approved mixing zone boundary.

Routine 2020 WET testing was undertaken whilst a high water cut well was producing. Results indicated PW toxicity was lower than previous years, with a safe dilution estimate for the 99% SPL of 1 in 667 (BMT 2021) (Table 6-13) indicating the short-term elevation in PW toxicity observed in the 2019 high water cut well unloading trial PW sample, normalised following the initial unloading period, likely following the return to OIW rates <30 mg/L.

Based on modelling, OIW trends observed during high water cut well unloading, and WET testing results, the non-routine PW discharge associated with high water cut well unloading/cycling is considered to have a short term, temporary and localised impact to water quality, and not predicted to result in impacts beyond the approved mixing zone boundary.

Commissioning of GWF4 and two future tie-in production wells (initial start-up)

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Modelling undertaken to predict where PEC/PNEC ratios are expected to be achieved during high water cut well unloading is considered a suitable analogue for predicting potential impacts from PW discharged during commissioning of GWF4 and two future tie-in production wells. The modelling results demonstrated that the worst case impact occurs during the transitional period, during which a PEC:PNEC ratio of 1 is achieved in 210 m (Table 6-14), well within the approved mixing zone boundary.

MEG from flowline preservation is miscible in water and considered PLONOR. Upon discharge via the produced water system, MEG is expected to mix with the receiving environment with no lasting environmental impact. Commissioning of the GWF4 and two future tie-in production wells require discharge of approximately 30-140 m^3 of an MEG/water mixture (85%/15%). Although MEG is classified as PLONOR, it is a solvent and can liberate hydrocarbons as it passes through the process. As a result, artificially elevated OIW levels are expected during well commissioning. Manual OIW sampling will therefore be used during this period, recognising that MEG, despite being PLONOR, can increase OIW.

Based on modelling, and short duration of each well start-up, non-routine discharge associated with commissioning of GWF4 and two future tie-in production wells (initial start-up) is considered to have a short term, temporary and localised impact to water quality, and not predicted to result in impacts beyond the approved mixing zone boundary.

Production restarts

There is the potential for the GWA facility to experience high OIW during production restarts, due to mobilisation of emulsions observed in the PW system after shutdowns. Production restarts after planned shutdown are expected to occur one to three times per year. The emulsions are thought to be caused by calcium carbonate scale and waxy hydrocarbons combining with water during shutdown periods when the topsides process trains have materially cooled down. Elevated OIW in PW discharge during production restarts is expected to be temporary and of short duration (up to three days).

Based on modelling described above, and short duration of elevated OIW, the non-routine discharge during production restarts is considered to have a short term, temporary and localised impact to water quality, and not predicted to result in impacts beyond the approved mixing zone boundary.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
None identified				
Good practice				
Implement Woodside's Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	F: Yes. Routinely implemented to the chemical selection process for Woodside facilities. CS: Minimal cost. Standard practice.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge.	Benefits outweigh cost/sacrifice.	Yes **C 5.1**
Monitoring of OIW concentrations in accordance with PARCOM 1997/16 Annex 3 methodology. • During routine operations limit PW OIW to less than 30 mg/L 24 hr rolling average. • During non-routine high water cut well unloading activities limit PW OIW to less than 100 mg/L 24 hr rolling average, for up to 7 days.	F: Yes CS: Monitoring and implementation costs. Standard practice. The 30 mg/L 24 hr rolling average limit proposed is a legacy of the former environment regulations 29 and 29A repealed in 2014. Reduction of this limit is not considered feasible or practicable. The current limit is effective in managing	Limiting OIW concentrations within PW reduces impacts to the environment.	Benefits outweigh cost/sacrifice. The adoption of a limit ensures that PW OIW is controlled. A separate limit for non-routine activities provides a proportional approach to enable startup of wells, assist in ongoing OIW management while ensuring that impacts are of short duration, localised and temporary. PW WET testing and chemical characterisation data obtained during high water cut well unloading	Yes **C 6.1**

[33] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
• During non-routine high water cut well cycling activities limit PW OIW to less than 100 mg/L 24 hr rolling average, for up to 4 days. • During non-routine commissioning (initial start-up) activities, limit PW OIW to less than 100 mg/L 24 hr rolling average, for each well for 4 days • During non-routine production restart activities, limit PW OIW to less than 100 mg/L 24 hr rolling average, for up to 3 days for the restart of each processing train (T100 and T200). • PW OIW is limited to a 30 mg/L monthly rolling average at all times.	potential impact of PW discharge. The 100 mg/l limit for non-routine activities is consistent with the maximum permitted concentration under the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations (UK) 2005. Based on benchmarking against other Australian operations 100 mg/L rolling 30-day averages have been used during initial commissioning periods. The 30 mg/L monthly rolling average inherently limits the frequency and duration of non-routine activities.		indicated no impact from PW outside of the approved mixing zone boundary.	
Continuous reservoir management during routine operations, i.e. changing the relative contribution to facility production of each well, including choking back high OIW wells, to maintain overall OIW concentration below Performance Standard.	F: Yes CS: Monitoring and implementation costs. Standard practice.	Continuous reservoir management is a contingency measure during routine operations to ensure that 24 hr rolling limits are not exceeded, even if a temporary spike in OIW concentration occurs.	If the facility exceeds 30 mg/L (or 100 mg/L during non-routine activities) for a short period which places the rolling 24 hr period limit at risk, the facility is able to change the relative production from each well to ensure a breach of the OIW limit does not occur. This control achieves the same performance standard as the monitoring of OIW concentrations control.	Yes **C 6.2**
Implementation of the Adaptive Monitoring and Management Framework for PW discharges including: • monitoring of PW discharge volume	F: Yes CS: Monitoring costs. Standard practice	The OMDAMP provides for detection of significant changes to the PW discharge characteristics (i.e. volumes, OIW concentration, chemical	Woodside has developed the OMDAMP based on operational experience from relevant offshore assets. The OMDAMP considers risk-based adaptive management measures.	Yes **C 6.3**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
• chemical characterisation • WET testing.		characterisation) that may cause an increased impact or risk to the marine environment. Monitoring is designed to detect if 99% species protection is achieved at the approved mixing zone boundary. Through the implementation of the OMDAMP, potential risks to the environment are reduced.		
Online monitoring and/or procedural controls in place to monitor and control PW discharge volume and OIW concentrations; and prevent discharge of PW with high OIW concentrations. Process performance monitored by OIW concentration analyser and volume meter(s). Conduct manual sampling on a six-hourly basis when online analyser is unavailable where safe and practicable to do so.	F: Yes CS: Minimal cost. Standard practice.	The OIW analyser and flow meter provides optimal process control and safeguarding to monitor, control and prevent discharge of PW with high OIW concentration to the environment. Monitoring of OIW concentrations when online analyser unavailable when safe and practicable to do so.	Online monitoring control is WMS requirement – must be adopted.	Yes **C 6.4**
During non-routine activities, when OIW > 30 mg/L, conduct manual sampling (1-hourly to 6-hourly, dependent on OIW concentrations, as described in the relevant Operating Procedure).	F: Yes CS: Monitoring and implementation costs. Standard practice.	Horiba sampling provides additional verification of OIW concentrations.	Additional cost to resource manual sampling during non-routine activities is considered proportionate to additional verification of OIW concentrations.	Yes **C 6.5**
The online analyser is calibrated with a manual sample in accordance with Offshore Laboratory Determination of Oil in	F: Yes CS: Monitoring and implementation costs. Standard practice.	Calibration of equipment to maintain quality control.	Calibrations undertaken at appropriate frequency to maintain quality control and in line with procedures.	Yes **C 6.6**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Water Standard Operating Procedure.				
Non-routine PW discharge activities will not occur concurrently.	F: Yes CS: Minimal cost due to reducing flexibility to blend reservoir liquids	Management to avoid concurrent non-routine PW discharge activities limits elevations in OIW concentrations within PW and when combined with the 30 mg/L monthly rolling average limit, effectively minimises impacts to the environment.	Avoiding concurrent non-routine activities with potentially high OIW helps to ensure that the OIW limits are met; the benefits outweigh cost/sacrifice.	Yes **C 6.7**
Professional judgement – eliminate				
Reinjection of PW into reservoirs	F: Possible – some technical risk associated with reservoir uncertainty. CS: Significant. The reinjection of PW would require significant modification to the GWA facility, including drilling of injection wells. This would require considerable design and construction costs. Previous studies indicate a cost in excess of AUD$20M CAPEX for PW reinjection, with an estimated OPEX cost of AUD$1M.	The environmental impacts in the approved mixing zone around the facility would be eliminated. Long term biological impacts from Produced Water which are outside of the acceptable limits of change, from contaminant accumulation in sediment and bioaccumulation effects over time, are prevented by the PW Monitoring and Management Framework. Currently, PW does not represent a sediment accumulation or resulting bioaccumulation risk (refer to Potential impacts to Sediment Quality for more detail). Given that a moderate level of environmental protection will be sustained at 500 m, which is the Operational Exclusion Zone of the facility, there is currently no opportunity for other socio-economic marine users to	As part of the 2015 PW study into treatment improvement for GWA, Woodside examined the potential for reinjection of PW. Woodside has not identified a suitable reservoir, and such an option would likely require additional drilling activities to be undertaken. GWA is no longer capable of supporting platform-based drilling. Reinjection is not feasible unless a suitable reservoir is identified. It is not feasible to reinject into a shut-in GWA platform well because the wells continue to have very high reservoir pressure, which would require significant facility modifications to overcome. Drilling and Subsea work activities to establish a reliable PW reinjection well and subsea infrastructure also introduce significant complexity, risk and cost. Retrofitting PW topsides reinjection equipment to GWA introduces significant modifications which pose safety risks on an operational gas facility. Together the significant retrofit risks, associated environmental impact	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
		benefit from a smaller mixing zone. Therefore, there is negligible socio-economic benefit to reinjection.	(drilling and subsea construction, greenhouse gas emissions associated with 7-15 MW based on known requirements for Enfield - Laverda) is considered significantly disproportionate to the potential slight environmental impact improvement. As such, no further engineering design or screening studies reporting is considered reasonably practicable. It is not necessary to conduct a reservoir-by-reservoir analysis to understand these costs. For type B impacts, it is appropriate to consider case specific drivers to ALARP management. The lack of a suitable reservoir contrasts with Woodside's facilities that currently reinject Produced Water. The reinjection of PW would also introduce additional sources of environmental risks and impacts, such as those associated with drilling injection wells (e.g. drill cuttings) and maintaining injection capability (e.g. increased greenhouse gas emissions from power generation for pumps, increased chemical usage etc.). Given the localised, slight non-significant impact of PW discharges, and the considerable costs involved in developing a PW reinjection capability for the GWA facility, implementation risks and environmental impacts (greenhouse gas, chemical use), the costs are grossly disproportionate to the potential environmental benefit gained.	
Professional judgement – substitute				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
None identified				
Professional judgement – engineered solution				
Utilise adsorbent hydrocarbon filters to manage OIW upsets.	F: Yes CS: Minimal cost (filter replacement). Standard practice.	Potential minor reduction in OIW concentration. Assist in removal of dispersed oil, depending on cause of high OIW readings.	Benefits outweigh cost/sacrifice, where implemented to manage OIW upsets only. Adsorbent filters are not used constantly during routine operations as they become saturated quickly and require frequent changeout.	Yes **C 6.8**
Upgrade of existing (i.e. permanent) treatment system to increase capacity, whilst maintaining OIW limits: upgrade vessel internals in the T200 PWCS	F: Yes CS: Moderate. Cost of modifying current produced water system vessel internals	Potential minor reduction in OIW concentration. Overall consequence ranking will not be reduced further. Control was assessed to facilitate access to reserves (i.e. by increasing water handling capacity) constrained due to OIW performance.	Following the 2015 PW study into treatment improvement for GWA, the PW treatment system was improved in 2019 by upgrading the existing vessel internals in the T200 PWCS to increase flow whilst maintaining existing OIW limits.	Yes Engineered solution permanently implemented
Upgrade of existing (i.e. permanent) treatment system to increase capacity, whilst maintaining OIW limits: upgrade the OWDS and PW Degasser, install a hydrocyclone.	F: Potentially feasible. CS: Moderate. Cost of upgrading OWDS and PW degasser and installation of a hydrocyclone. Other equipment and software modifications would also be required to accommodate changes to control and safeguarding strategies for the vessels and a new hydrocyclone. Previous studies indicate a cost between of AUD$15-20M CAPEX for upgrades and hydrocyclone installation, with an estimated OPEX cost of AUD$500k p.a.	Potential minor reduction in OIW concentration. Overall consequence ranking will not be reduced further. Control was assessed to facilitate access to reserves (i.e. by increasing water handling capacity) constrained due to OIW performance.	Woodside examined the potential for further developing GWA water handling capacity (beyond PWCS internals upgrade above) by upgrading the OWDS, the PW Degasser as well as the installation of a hydrocyclone. Cost associated with upgrading the OWDS, PW degasser and installation and operation of a hydrocyclone is not currently considered ALARP because the additional costs and risks associated with this option are considered disproportionate to the environmental benefit that is expected to be yielded.	No
Chemical injection of water clarifier to reduce OIW concentration	F: Potentially. Woodside trialled water clarifier injection to reduce OIW	Minor reduction in OIW concentration, however, does not reduce the overall	Woodside's assessment of chemical injection trials did not recommend proceeding with control	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	concentrations. This test resulted in a reduction in OIW concentration, however resulted in the formation of viscous material within the process equipment. CS: Moderate. Initial cost of modifying production system to include chemical dosing point. Ongoing cost of chemical procurement.	consequence rating. Further, this results in additional chemical load, and lifecycle environmental footprint associated with packaging, logistics, waste management and potential process upsets.	due to the risk of equipment blockages and potential upsets to process chemistry. Mitigating these potential impacts may require modification of the production system, incurring a capital expenditure. The discharge of the clarifying agent with the PW stream may result in additional toxic effects. Ongoing chemical consumption would also incur operational expenditure. Given the nature and scale of impacts forming the current PW discharge, the cost of developing a chemical injection is disproportional to the environmental benefit.	
Adoption of a permanent secondary treatment stage to reduce OIW concentration	F: Potentially feasible. Woodside trialled a produced water compact flotation unit (CFU) to provide secondary treatment of PW. The initial trial was unsuccessful due to low flow experienced to the CFU skid. CS: Moderate. Initial cost of modifying production system to include tie-in point. Ongoing cost of CFU skid rental and maintenance.	Potential minor reduction in OIW concentration. Overall consequence ranking will not be reduced further. Control was assessed to facilitate access to reserves (i.e. by increasing water handling capacity) constrained due to OIW performance.	A continuous improvement PW treatment technology retrial occurred over the period 4th -11th December 2017. The scope was to test a Compact Flotation Unit on GWA. A sidestream of PW going to the closed drains caisson was treated to reduce OIW. CFU effectiveness was measured through a rental oil droplet online analyser during the retrial. The retrial (at a different tie-in point to the initial trial) was completed successfully as sufficient flow was experienced to the skid to gather meaningful data. The CFU did not perform well downstream of the degasser under real process conditions with increased flow through the PW system via one of the high water cut wells, i.e. trial was insufficient to enable bean up of a high water cut well with a 30	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
			mg/L 24 hr rolling average OIW limit.	
Adoption of a permanent tertiary treatment stage to reduce OIW concentration.	F: Potentially feasible. Large deck space would be needed which is not currently available. CS: Significant cost. Deck reinforcement or cantilevers required, as well as high cost associated with these maintenance intensive technologies. Previous studies indicate a cost between of AUD$5-15M CAPEX for tertiary treatment stage technology, with an estimated OPEX cost of AUD$250k-750k.	Installation of a tertiary treatment stage to support well optimisation and process debottlenecking (to optimise overall reservoir recovery) could be feasible to ensure OIW remains below 30 mg/L. As OIW performance is currently a production constraint, implementation of this option would support being able to lift that constraint, increasing water production and maintaining OIW levels. Negligible OIW reduction is expected. Installation of an MPPE may potentially provide a minor reduction in some toxicants (eg BTEX, PAHs) over the life of the facility. As the 99% species protection level is currently anticipated to be achieved within 1,200 m of the facility during routine operations, the incremental improvement in environmental performance would be so small it would not currently be safely measurable.	Woodside examined the potential for installation of an MPPE. Centrifuges and MPPE are large and heavy, requiring deck reinforcement or cantilevers, significantly increasing CAPEX cost. They are also maintenance intensive. This introduces significant OPEX costs, and additional risk from exposure of personnel. Additionally, these options tend to have high power consumption, introducing an environmental impact from greenhouse gases. The adoption of tertiary treatment is not currently considered ALARP because the additional costs and risks associated with this option are considered disproportionate to the environmental benefit that is expected to be yielded. Installation that would not increase PW treatment capacity and is there purely to reduce hydrocarbon content in current discharges is considered disproportionate from a cost/sacrifice perspective for small localised environmental improvement gains.	No
Mobile treatment technology during high water cut well unloading/cycling or production restart.	F: Yes CS: Equipment hire costs, mobilisation costs, labour, management of change, operational requirements.	Potential improved OIW treatment performance to avoid peaks in short duration OIW discharges. Peaks in OIW discharge are known to be of short duration, with monthly 30 mg/l rolling average maintained, therefore the overall	The equipment hire, ongoing deck space requirements, mobilisation, labour and management of change costs are disproportionate compared to temporary and localised impacts associated with short duration increase in OIW during high water cut well unloading, cycling and	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
		risk reduction is negligible.	restart activities. Data obtained during high water cut well unloading indicate no impact to ecosystem integrity from PW outside of the approved mixing zone boundary. Mobilising temporary treatment technology reduces operational flexibility (e.g. after an ESD restart), which can be provided through other means (e.g. **C 6.2**).	
Temporary OIW polishing skid during well commissioning (initial start-up)	F: Yes CS: Equipment hire costs, mobilisation costs, labour, management of change, operational requirements.	Increased ability to treat higher OIW concentrations, flowline preservation fluids containing MEG, and minor fines from the well start-up activities. Greater operational flexibility and higher likelihood of being able to meet OIW discharge requirements whilst maintaining production during commissioning (initial start-up) activities.	Additional labour and temporary operating procedures associated with initial startup of wells are proportional to manage the risk of high OIW. GWA facility has deck space and suitable tie-in points for an OIW polishing skid, i.e. minimal modifications required to connect temporary skid. There is also proven application of this technology during previous tie-back start-ups; therefore, the benefits of adopting this control outweigh the costs.	Yes **C 6.9**
Professional judgment – procedures and administration				
Routine in-situ monitoring beyond the requirements of Woodside's OMDAMP for an existing asset	F: Yes CS: Increasing in-situ monitoring would result in additional offshore demand on resources, safety hazards and costs associated with monitoring and sampling, such as vessel activities, logistics, manual labour, analytical laboratory and service provider costs.	In-situ monitoring following release is not an effective control to manage the nature of PW discharges and results in limited to no impact reduction. In-situ monitoring beyond the adaptive management approach outlined in the OMDAMP does not follow good application of the hierarchy of controls and results in disproportionate sacrifice with regard	Long term monitoring of water and sediment characteristics at the GWA platform indicate that the PW discharge is not detectable beyond the approved mixing zone. Sediment contamination over time has been stable and is the result of historical drilling activities (i.e. not the result of PW discharge) and limited to within 400 m of the GWA platform. PW separation process design, optimisation, monitoring and surveillance offer the	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
		to execution risks and costs for limited gain.	primary controls, with discharge OIW analysis in place to detect performance variations. Woodside maintains a routine OIW monitoring program for the PW stream (including adaptive management via the OMDAMP, which assesses the need for in-situ monitoring). The work undertaken to date provides Woodside with a sound understanding of the nature and scale of the environmental impacts from PW discharge, which would not be further improved by increasing the frequency of routine in-situ monitoring. Per the OMDAMP, should routine PW monitoring indicate potential impact beyond the approved mixing zone, further investigations are undertaken, including consideration of non-routine in-situ monitoring. The execution risks and cost of implementing this control is grossly disproportionate to the environmental benefit.	
Annual review of routine monitoring results and determine requirement for non-routine sediment quality monitoring as per OMDAMP.	F: Yes. CS: Monitoring and implementation costs. Standard practice.	Review of monitoring results to determine if additional monitoring is required does not reduce environmental impact but provide necessary assurance that impact continues to be appropriately defined.	Additional risk-based monitoring is proportional to the additional cost of implementation and part of the OMDAMP.	Yes **C 6.10**
Risk-based analysis				
Application of Woodside's Risk Management Procedures and implementation of the OMDAMP provide for assessment and ongoing management of impacts from PW discharges. This includes: • ongoing hazard identification, risk assessment and identification of control measures • ongoing monitoring PW discharges to verify performance and detect changes in discharge characteristics.				
Company values				
Woodside's corporate values require personnel to comply with applicable policies, standards, procedures and processes, and to be accountable for their actions in line with the Woodside Compass. As outlined above, the				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[33]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Petroleum Activity will be undertaken in accordance with these requirements, including the implementation of controls to manage PW discharges.				
Societal values				
Societal values have been considered through engagement with relevant stakeholders, as described in Section 5. Woodside distributed a Consultation Information Sheet outlining the Petroleum Activity to identified relevant stakeholders (Section 5 and Appendix F). No stakeholder concerns specific to PW discharges were identified through this process.				
ALARP statement: On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type B; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the adopted controls appropriate to manage potential impacts of PW discharges associated with GWA facility operations on water quality and environmental receptors. Woodside has undertaken additional PW treatment studies, treatment trials, upgrades to PW system vessel internals, use of a temporary OIW skid for tie-back commissioning, and ongoing monitoring of OIW concentrations and discharge volumes. Risk-based analysis, including PW discharge modelling, has been used to inform the evaluation of environmental impacts. Woodside implements a risk-based, adaptive OMDAMP, which includes annual and triennial end-of-pipe monitoring. The outcomes of modelling studies and long-term monitoring have been considered in determining the ALARP position. In-situ water quality and sediment sampling indicate no impact outside of the approved mixing zone. As no reasonably practicable additional or alternative controls have been identified that would further reduce impacts without disproportionate sacrifice, the impacts are considered ALARP.				

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Demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The impact assessment has considered the relevant principles of ESD: • conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • inter-generational equity, ensuring the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • integration of long-term and short-term economic, environmental, social and equitable considerations in decision-making. ***Internal context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) • Woodside Environmental Management Standard (including requirements for mixing zones and monitoring). ***External context*** The impact assessment has considered feedback from relevant persons (Section 5). No stakeholder feedback relevant to PW was identified. PW control measures and monitoring frameworks have been designed to be commensurate with the consequence level, location and sensitivity of the receiving environment (including social and amenity values). These measures address broader societal expectations to an acceptable level. ***Other Requirements*** The adopted controls and acceptability assessment has considered regulatory guidance, including the *WA EPA (2016) Technical Guidance: Protecting the Quality of Western Australia's Marine Environment* and the *ANZG (2018) Guidelines*. These guidelines require that environmental values are identified and levels of ecological protection are established. To maintain overall ecosystem health, the cumulative spatial extent of areas assigned lower levels of ecological protection should be small relative to the areas assigned high and maximum levels of protection. The Monitoring and Management Framework aligns with these principles by applying acceptable limits of change consistent with the levels of protection described in WA EPA	The predicted level of impact to ecosystems, species, habitat or physical or biological attributes from discharge of produced water is of an acceptable level (consequence level, E – slight and low level), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements and industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for AMPs, recovery plans and conservation plans/advice • the predicted level of impact has been reduced to ALARP. To manage impacts from discharges of PW to marine sediment, water quality, ecosystems/habitat or species to an acceptable level the following EPO has been applied: **EPO 6:** No impact to the environment outside the Approved Mixing Zone from planned discharges of produced water. The adopted controls are considered appropriate to manage the impacts of the Petroleum Activity and compliance with those controls demonstrates that the EPO have been met.

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Demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
(2016) and ANZG (2018). The level of ecological protection afforded to sensitive receptors is also consistent with the *North-west Marine Bioregion Network Management Plan (2018)*. By monitoring and managing produced water (PW) discharges to achieve 99% species protection at a distance of 1200 m, there is a high level of confidence that impacts will be detected and managed through the Offshore Marine Discharges Adaptive Management Plan (OMDAMP). The Minamata Convention on Mercury (2013) (ratified by Australia in 2021) requires measures to control releases containing mercury or mercury compounds. Measures relevant to PW discharges from the platform are outlined below: • *Release limit values:* Guideline values related to mercury are established and applied to control, and where feasible, reduce release. • *Best available techniques and environmental practices:* Monitoring through annual chemical characterisation and implementation of the OMDAMP provides an adaptive management framework to support best environmental practices. • *Multi-pollutant control approach:* The monitoring framework includes comprehensive chemical characterisation and WET testing, enabling assessment of the combined effects of contaminants and potential additive toxicity.	

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
EPO 6 No impact to the environment outside the Approved Mixing Zone from planned discharges of produced water.	**C 5.1** Chemical Selection and Assessment Environment Guideline: • where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • if chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	**PS 5.1** Refer to Section 6.7.4.	**MC 5.1.1** Refer to Section 6.7.4.
	C 6.1 Monitoring of OIW concentrations in accordance with PARCOM 1997/16 Annex 3 methodology.	**PS 6.1** • For routine operations, OIW is limited to 30 mg/L 24 hour rolling average. • For non-routine well cycling activities, OIW is limited to 100 mg/L 24 hour rolling average, for up to 7 days per well. • For non-routine well commissioning (startup) well intervention clean up or well unloading activities, OIW is limited to 100 mg/L 24 hour rolling average, for up to 4 days per well. • For non-routine production restart activities, OIW is limited to 100 mg/L 24 hr rolling average, for up to 3 days per processing train. OIW is limited to 30 mg/L monthly rolling average at all times.	**MC 6.1.1** Records demonstrate during routine activities and non-routine activities OIW rolling average limits are not exceeded.
	C 6.2 Continuous reservoir management during routine operations, i.e. changing the relative contribution to facility production of each well, including choking back high OIW wells, to maintain overall OIW concentration below Performance Standard.		

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 6.3 Implementation of the Adaptive Monitoring and Management Framework for Produced Water: • monitoring of PW discharge volume • chemical characterisation • WET testing.	**PS 6.3** No impact to the environment from PW discharge outside of approved mixing zone based on multiple lines of evidence.	**PS 6.3.1** Records show that routine monitoring has been conducted as per Table 6-12. Further Investigations have identified no potential to impact environment from PW outside the mixing zone.
	C 6.4 Online monitoring and/or procedural controls in place to monitor and control PW discharge volume and OIW concentrations; and prevent discharge of PW with high OIW concentrations, or off spec/outage procedures. Process performance monitored by OIW concentration analyser or manual sampling, and volume meter(s) where available.	**PS 6.4.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.6) and SCE Technical Performance Standard(s) P31 – Environmental Emissions Monitoring and Controls, which: • provides means of detecting environmental releases, emissions and discharges to prevent MEEs from manifesting over time, and/or assure compliance monitoring and reporting equipment as required. • ensures monitoring data is available to control PW discharge volume and OIW concentrations; to prevent discharge of PW with high OIW concentrations.	**MC 1.11.1** Refer to Section 6.7.1
		PS 6.4.2 In the event the OIW analyser is offline, manual sampling is undertaken when safe and practicable to do so (subject to MOC if samples are unable to be taken). Six hourly samples are taken in accordance with the GWA's sampling requirements.	**PS 6.4.2** Records demonstrate compliance with off spec/ outage procedures.

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EPOs, EPS and MC			
EPO	***Controls***	***PS***	***MC***
	C 6.5 During non-routine activities, additional sampling to monitor OIW concentrations > 30 mg/L; and prevent discharge of PW with OIW > 100 mg/L.	**PS 6.5.1** During non-routine activities, when OIW is > 30 mg/L, conduct manual sampling (1-hourly to 6-hourly, dependent on OIW concentrations, as described in the relevant Operating Procedure).	**PS 6.5.1** Records demonstrate manual sampling undertaken.
	C 6.6 The online analyser is calibrated with a manual sample in accordance with Offshore Laboratory Determination of Oil in Water Standard Operating Procedure.	**PS 6.6** Complete calibrations of online analyser and manual OIW sampling equipment in accordance with Offshore Laboratory Determination of Oil in Water Standard Operating Procedure.	**Refer to MC 6.5.1** Records demonstrate manual sampling and online analyser calibration is undertaken as appropriate.
	C 6.7 Non-routine (potentially high OIW) well cycling or unloading activities do not occur concurrently.	**PS 6.7** Non-routine (potentially high OIW) well activities not to be undertaken concurrently.	**MC 6.7.1** Records demonstrate that non-routine (potentially high OIW) well activities did not occur concurrently.
	C 6.8 Adsorbent hydrocarbon filters are utilised to manage OIW upsets.	**PS 6.8** Utilise adsorbent hydrocarbon filters to manage OIW upsets.	**MC 6.8.1** Records demonstrate that adsorbent hydrocarbon filters have been utilised to manage OIW upsets.
	C 6.9 Temporary OIW skid used during well commissioning (initial start-up).	**PS 6.9** Temporary OIW skid available and utilised during well commissioning (initial start-up).	**MC 6.9.1** Records demonstrate a temporary OIW skid used during well commissioning (initial start-up).
	C 6.10 Annual review of routine monitoring results and determine requirement for non-routine sediment quality monitoring as per OMDAMP.	**PS 6.10** Complete review of routine monitoring results and determine if contaminants with the potential to impact sediments have increased and whether non routine sediment quality monitoring should be undertaken to determine extent of impacts.	**MC 6.10.1** Records show annual review has been conducted as described.

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6.7.6 Routine and non-routine discharges: utility systems, drains and support vessels

Context		
Drainage systems – Section 3.6.4 Utility systems – Section 3.6.5 Support vessel operations – Section 3.8	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	*Environmental value(s) potentially impacted*						*Evaluation*							
	Marine Sediment	Water Quality	Air Quality (incl Odour)	Ecosystems/ Habitat	Species	Socio-economic	Decision Type	Consequence/ Impact		Likelihood	Risk Rating	ALARP Tools	Acceptability	Outcome
Discharge of sewage, grey water and putrescible waste from the GWA platform and support vessels.		✓					A	F	Cumulative – E	-	-	LCS GP PJ	Broadly Acceptable	EPO 7
Discharge of deck water, drainage systems and bilge water from the GWA platform and support vessels.		✓												
Discharge brine and cooling water from the GWA platform and support vessels.		✓												

Description of source of impact

Sewage, grey water and putrescible waste

Sewage and grey water generated on the GWA platform are treated (e.g. via maceration) and discharged to the marine environment via the sewage caisson. Putrescible wastes (e.g. food scraps) are macerated to < 25 mm diameter prior to discharge via the sewage caisson.

Support vessels may also discharge sewage, grey water and putrescible wastes. Sewage onboard vessels is routinely treated (e.g. via a sewage treatment plant (STP) or macerator) prior to discharge.

During routine maintenance or repair of treatment systems, short and infrequent direct discharges may occur.

The volume of sewage and grey water generated from the GWA platform is estimated to be approximately 8-9 m^3/day (based on ~75 L/person/day), with actual volumes varying depending on personnel levels. Support vessels typically generate smaller volumes. An ASV which may operate for up to 3 months alongside the GWA platform would have a larger POB (up to 500) and will therefore discharge ~35-40 m^3 per day.

Deck water, drainage systems and bilge water

Operational non-process discharges, maintenance drainage, flushing discharges, washdown water and minor spills are contained and managed through the GWA platform drainage systems. These include:

- non-hazardous open drains - collect drainage from non-hazardous areas and discharges directly to the environment
- hazardous open drains - collect wastewater, hydrocarbons and chemicals from hazardous areas via deck drains, tundishes and drip trays. Collected fluids are treated prior to discharge (Section 3.6.4.1).
- hazardous closed drains– collect liquids from pressurised and hazardous equipment prior to maintenance, and intermittent flows from process equipment. Collected hydrocarbons are treated (Section 3.6.4.3).

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Chemicals used onboard the GWA platform may be introduced to the environment via drainage system, including through;

- deck washdown and cleaning activities
- maintenance drainage of treated water systems (e.g. tempered water)
- marine growth treatment of drain caissons.

Support vessels also generate bilge water, which may contain water, oil, detergents, solvents, chemicals and particles. Bilge water is typically treated prior to discharge in accordance with regulatory requirements.

Deck drainage from support vessels may also be discharged overboard and may contain traces of hydrocarbons and chemicals. Sources include rainfall events and deck activities such as cleaning or equipment washdown.

Cooling water and brine

Seawater is used onboard the GWA platform for process and machinery cooling (Section 3.6.5.3) and is discharged via the seawater dump caisson. Cooling water is typically discharged at approximately 32°C with volumes of approximately 4,275 m^3/hr.

To control marine growth, the seawater system is dosed with sodium hypochlorite to a target residual concentration of approximately 0.5 ppm prior to discharge.

The reverse osmosis (RO) plant onboard the GWA platform produces potable water, with brine discharged to the environment. RO brine typically has a salinity of 55-60 ppt, with approximately 75 m^3 of brine produced per day. Small quantities of anti-scaling and cleaning chemicals may also be present.

Support vessels also discharge smaller volumes of cooling water and RO brine.

Impact assessment

Environmental value(s) potentially impacted

The environmental impacts associated with routine and non-routine discharges from utility systems, drains and support vessels include:

- eutrophication, resulting from addition of nutrients (e.g. nitrates and phosphorus) from sewage, grey water and putrescible waste, which may lead to oxygen depletion or phytoplankton blooms. Other potential contaminants include ammonia, faecal indicator bacteria, organic compounds, metals and surfactants.
- temporary and localised increases in turbidity as a result of deck water, drainage systems and bilge water
- changes to ambient water quality as a result of deck water, drainage systems and bilge water, are expected to disperse rapidly following discharge. These discharges may contain low concentrations of hydrocarbons, chemicals, particulates and other contaminants.
- changes in temperature, salinity, pH and chemical composition as a result of cooling water discharges. Elevated temperatures may influence marine organisms through behavioural responses (e.g. avoidance or attraction) or minor physiological stress.
- localised increases in salinity from brine discharge, potentially causing osmotic stress to marine organisms, particularly planktonic and sessile species.

Mobile species are expected to avoid discharge plumes, and no impacts to protected species or benthic habitats are expected.

Water quality

Eutrophication, changes in temperature, salinity, pH and chemical composition can impact water quality.

Water quality monitoring around the GWA platform indicates no detectable decrease in oxygen saturation, nutrient levels or increase in oxygen demand (BMT Oceanica 2015). Monitoring of sewage discharges has demonstrated that a 10 m^3 sewage discharge reducing to approximately 1% of its original concentration within 50 m of the discharge location (Woodside 2008). Further monitoring at distances 50-200 m and across multiple depths confirmed no measurable increases above background levels for key parameters (e.g. total nitrogen, phosphorous and metals) (BMT Oceanica 2015).

Although the NWS Province is characterised as a low nutrient environment (DEWHA 2008), it is also recognised as a productive ecosystem with rapid nutrient recycling (Furnas and Mitchell 1999). Estimated nutrient loading from sewage and putrescible waste (approximately 2.4-3.0 kg/day of TN and 0.38-0.43 kg/day of TP) is small relative to natural nutrient turnover.

Discharged cooling water is typically warmer than ambient seawater (ambient range ~24.3–28.5°C). Due to its buoyancy, the discharge forms a near-surface plume that is rapidly mixed by waves and currents. Monitoring at the GWA platform indicates that water temperatures within the mixing zone are consistent with background levels (BMT Oceanica 2015).

Due to its higher density, brine sinks and disperses through the water column, promoting mixing. Monitoring at the GWA platform indicates salinity within the mixing zone is consistent with background levels (BMT Oceanica 2015), demonstrating rapid dilution.

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Sodium hypochlorite used for marine growth control is expected to degrade rapidly following discharge. Monitoring indicates no measurable change in pH within the mixing zone, suggesting rapid dilution and dispersion.

Discharges from vessels are typically dispersed due to vessel movement, enhancing mixing. The exception is the ASV, which may remain connected to the GWA facility, if deployed.

Impacts to marine organisms (such as plankton and fish larvae) may occur in the immediate vicinity of discharge points, depending on contaminant type and concentration. While marine fauna may occur within the Operational Area, the open-ocean environment does not contain known areas of ecological aggregation or increased sensitivity associated with these discharges. Any effects on planktonic organisms would be expected to be highly localised and transient due to the rapid dilution and dispersion of discharges. Given the open-ocean setting, plankton communities would be expected to recover rapidly with no lasting effect.

Utility discharges are routine and occur continuously across offshore petroleum facilities. Given the low discharge volumes, rapid dilution and lack of measurable change above background conditions within the mixing zone, cumulative impacts on water quality are not anticipated.

Accordingly, impacts from utility system discharges are expected to be highly localised to the immediate vicinity of discharge points, short-term in duration and not expected to result in measurable or lasting changes to water quality, marine ecosystems or ecological function.

Cumulative Impacts

Cumulative impacts may arise from repeated discharges at the GWA platform and from multiple discharge sources (platform and vessels). These include sewage, grey water, drainage water, bilge water, cooling water and brine, as well as other discharges such as PW.

However, given the small volumes, rapid dilution, localised extent of discharge plumes (typically within ~100 m), and the well-mixed open ocean environment, cumulative impacts are expected to remain slight and low-level.

Given the spatial separation from other facilities (e.g. NRC), cumulative impacts with external sources are not expected.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels compliant with Marine Orders for safe vessel operations: • Marine Orders 91 (Oil) • Marine Orders 95 (Pollution prevention – Garbage) • Marine Orders 96 – (Pollution prevention – sewage) Marine Orders 91, 95 and 96 (pollution prevention) reduce the potential impact of marine wastewater discharges on water quality.	F: Yes CS: Minimal cost. Standard practice.	Marine Orders required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Legislative requirement – must be adopted.	Yes **C 7.1**
Good practice				
Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no	F: Yes. Woodside routinely implements a chemical selection process based on the OCNS at the facility.	Selection and assessment of chemicals in accordance with the Woodside process reduces	Woodside's chemical selection process is used to ensure chemicals are	Yes **C 5.1**

[34] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	CS: Minimal. The OCNS is widely used throughout the industry, and chemical suppliers are aware of the requirements of the scheme.	environmental impacts associated with planned chemical discharge.	selected with the lowest practicable environmental risks while still providing the required technical capability.	
Putrescible waste from the GWA platform and support vessels is macerated prior to overboard discharge.	F: Yes CS: Minimal cost. Standard practice.	Treating and macerating putrescible waste is standard industry practice, ensuring the substance disperses in the receiving environment with minimal effects to water quality.	Benefits outweigh cost/sacrifice	Yes **C 7.2**
Sewage from the GWA platform and support vessels is macerated prior to overboard discharge.	F: Yes CS: Minimal cost. Standard practice.	Treating and macerating sewage is standard industry practice, ensuring the substance disperses in the receiving environment with minimal effects to water quality.	Benefits outweigh cost/sacrifice.	Yes **C 7.3**
Electrochlorination system used for seawater systems to control marine growth.	F: Yes CS: Minimal cost. Standard practice. Eliminates chemical handling	Electrochlorination as a means of controlling biofouling is a widely used technique. It is used by marine vessels, drilling platforms and production facilities around the world as it provides a cost effective treatment system reducing the need for storage and handling of bulk chemicals.	Benefits outweigh cost/sacrifice.	Yes **C 7.4**
Professional judgement – Eliminate				
Capturing and treating all drainage.	F: No. Discharge from deck drainage is produced from rainfall events and is unavoidable. Collecting drainage during unstaffed operations is not	Not considered – control not feasible.	Not assessed, control not feasible.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	possible as there is a risk of the collection tank overfilling, resulting in potential spillage of hydrocarbons. CS: Eliminating the discharge by collecting all contaminated run-off and storing it is not practicable due to the size/weight and the unstaffed philosophy.			
Storing, transporting and treating/disposing onshore of sewage, greywater, putrescible and bilge wastes.	F: No. Would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not assessed, control not feasible.	No
Helideck foam systems use water as surrogate	F: High. Water can be used as a substitute for foam during testing of the helideck foam system. CS: Low –procedural updates and spool modifications.	Eliminates discharges of foam to the environment.	Benefit outweighs cost/sacrifice.	Yes **C 7.5**
Professional judgement – Substitute				
Long term transport of potable water from shore to the GWA platform and support vessels.	F: Yes. Potable water can be sourced form onshore water supplies. CS: Significant. The long-term costs and operational complexity associated with potable water bunkering outweigh cost and negligible environmental footprint associated with the RO system and brine discharge.	The potential environmental impact is ranked as having no lasting effect. Eliminating brine discharge would provide negligible environmental gain.	When considering the negligible impact from the discharge of brine reliance on bunkering of potable water and incremental support vessel activities is disproportionate to the environmental impact.	No
Professional judgement – Engineered Solution				
Replace existing sewage treatment with an integrated STP of type certified by MARPOL Annex IV Sewage [MEPC.159(55)].	F: Yes. CS: Significant. Replacement of the existing sewage treatment system onboard the GWA facility would require design, procurement and installation costs, for little to no decrease in nutrient concentrations released to the environment.	No meaningful reduction in nutrient-driven impacts (e.g. eutrophication), as nutrient content would be unchanged. Potential for reduced pathogen loading but given no sensitive receptors (i.e. humans) affected by the discharge, this has no environmental benefit.	Given the considerable costs involved in replacing the existing STP, along with the negligible reduction in environmental impact, the cost is considered to be grossly disproportionate to the environmental benefit.	No
Upgrade existing sewage treatment systems by	F: Yes. However, disinfection of sewage is intended to reduce	Minor reduction in impacts due to	Given the installation of a	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[34]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
retrofitting a disinfection system.	pathogenic bacterial loads and hence will have no impact on nutrient concentrations. CS: Significant. Installation of a disinfection system would incur design, procurement, installation and ongoing operational costs. Additional chemicals may also be required, introducing an additional source of environmental risk.	treatment of sewage, given offshore environment and high natural mixing which would occur.	disinfection system does not reduce the environmental impact of sewage discharge, along with the potential for additional chemical use, the cost is considered to be grossly disproportionate to the environmental benefit.	
GWA platform open hazardous drain system integrity maintained to contain potential spilled liquid hydrocarbon in areas as appropriate to safe integrated facility design.	F: Yes. CS: Minimal cost. Standard practice.	The open hazardous drain system is maintained to support appropriate disposal of environmentally hazardous liquids.	Benefits outweigh cost/sacrifice.	Yes **C 7.6**
Maintain level instrumentation to monitor and support hydrocarbon level management in GWA platform open hazardous and closed drain caissons to reduce likelihood of hydrocarbon entrainment/underflow from caisson to the environment.	F: Yes CS: Minimal cost. Standard practice.	Caisson level instrumentation ensures functional operational monitoring, to ensure hydrocarbon level is within expected ranges, and excursion alarms annunciate to alert operations as required.	Benefits outweigh cost/sacrifice.	Yes **C 7.7**
ALARP statement: On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), the adopted controls are considered appropriate to manage the impacts of planned routine and non-routine discharges of sewage, putrescible waste, grey water, bilge water, drain water, cooling water and brine from the GWA platform and support vessels. As no reasonably practicable additional or alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability statement: The impact assessment has determined that, given the adopted controls, routine and non-routine discharges of sewage, putrescible waste, grey water, bilge water, drain water, cooling water and brine, and firefighting media from either the GWA facility and support vessels are expected to result in localised and short-term impacts to water quality, sediments and benthic habitats, with no lasting effect on ecosystem function. At the platform, these discharges would mix with PW discharges but would dilute well within the established 300 m mixing zone and cumulative impacts beyond this area are not anticipated.

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Demonstration of Acceptability
On the basis of the assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), the adopted controls are considered appropriate to manage impacts to a level that is broadly acceptable. Compliance with these controls demonstrates that the EPO is met.

EPOs, EPSs and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO 7 Impacts from routine and non-routine discharges of liquid waste will be limited to planned activities and impacts described as part of the Petroleum Activity.	**C 7.1** Contract vessels complying with Marine Orders for safe vessel operations: • Marine Order 91 (Marine pollution prevention – oil) • Marine Order 95 (Pollution prevention – garbage) • Marine Order 96 (Pollution prevention – sewage). Marine Orders 91, 95 and 96 (pollution prevention) reduce the potential impact of marine wastewater discharges on water quality.	**PS 7.1** Vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and class	**MC 7.1.1** Records demonstrate vessels are compliant with standard maritime safety procedures (Marine Orders 91, 95 and 96).
	C 5.1 Chemical Selection and Assessment Environment Guideline: • where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • if chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.	**PS 5.1** Refer to Section 6.7.4.	**MC 5.1.1** Refer to Section 6.7.4.
	C 7.2 Putrescible waste from the GWA platform and support vessels macerated prior to overboard discharge.	**PS 7.2** Putrescible wastes macerated (specified to <25mm size) prior to overboard discharge.	**MC 7.2.1** Putrescible and sewage system maintenance records.
	C 7.3 Sewage from the GWA platform and support	**PS 7.3**	

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EPOs, EPSs and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
	vessels is macerated prior to overboard discharge.	Sewage wastes macerated prior to overboard discharge.	
	C 7.4 Electrochlorination system used for seawater systems to control marine growth.	**PS 7.4** Seawater electrochlorination system electrical currents set in accordance with required operating modes upon system start-ups.	**MC 7.4.1** Documented procedures to establish electrochlorination system electrical output currents.
	C 7.5 Helideck foam systems use water as surrogate	**PS 7.5** The helideck foam system will be tested annually using water as a substitute for foam.	**MC 7.5.1** The helideck proportioning rate test (PRT) procedures include water-only testing.
	C 7.6 GWA platform open hazardous drain system integrity maintained to contain potential spilled liquid hydrocarbon in areas as appropriate to safe integrated facility design.	**PS 7.6** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F22 – Open Hazardous Drains, to: ○ prevent escalation of an incident following loss of containment, fire and/or explosion by removing or containing flammable liquid from hazardous areas ○ support appropriate containment and disposal of environmentally hazardous liquids to avoid damage to the environment.	**MC 1.11.1** Refer to Section 6.7.1
	C 7.7 Maintain level instrumentation to monitor and support hydrocarbon level management in GWA platform open hazardous and closed drain caissons to reduce likelihood of hydrocarbon entrainment/underflow from caisson to the environment.	**PS 7.7** Instrumentation integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for:	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
		• P31 - Environmental Emissions Monitoring and Controls to: ○ provide means of detection of environmental releases, emissions and discharges to prevent MEEs from manifesting over time, and/or as required to assure compliance monitoring and reporting equipment.	

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6.7.7 Routine and non-routine atmospheric (direct) and greenhouse gas emissions (direct and indirect)

Context		
Utility Systems – Section 3.6.5 Flare Systems – Section 3.6.2.2 Greenhouse gas emissions – Section 3.6.11 Support vessel operations – Section 3.8	Physical Environment – Section 4.4	Stakeholder Consultation – Section 5

Impact evaluation summary

Source of impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
GWA facility fuel combustion, routine and non-routine flaring, and fugitive emissions			✓				A	F	-	-	LCS GP, PJ	Acceptable, if ALARP	EPO 8a EPO 8b EPO 8c EPO 9
Support vessel and helicopter operations			✓				A						
Consideration of indirect GHG emissions associated with onshore processing of gas, third party transportation, regassification and combustion by end users			✓			✓	B						

Description of source of impact

Air emissions associated with GWA facility operations can be classified into two categories:

- Atmospheric emissions (non-greenhouse gas emissions) are gases and particulates from an activity, or piece of machinery, which have a recognised adverse effect on human health and/or the environment. The main emissions responsible for these effects include carbon monoxide (CO), oxides of nitrogen (NOx), sulphur dioxide (SO2), particulate matter less than 10 microns (PM10), non-methane volatile organic compounds (VOCs), BTEX (benzene, toluene, ethylbenzene and xylenes), which are specific VOCs of interest.
- Greenhouse gas (GHG) emissions refer to gases that trap heat within the atmosphere through the absorption of longwave radiation reflected from the earth's surface. The main gases associated with this effect include carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). Other greenhouse gases include perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF6). These are considered to be both direct and indirect GHG emissions.

In this section, atmospheric emissions estimates are developed in line with Nationals Pollutant Inventory (NPI) emission estimation techniques (EET). GHG emissions are estimated using the National Greenhouse and Energy Reporting (NGER) Measurement Determination 2008 (Cth).

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The following section has been separated into direct GHG emissions (Scope 1) and indirect emissions (Scope 3), aligned with the definitions of the GHG Protocol Corporate Standard (GHG Protocol 2015) and NGER. Scope 2 emissions are not applicable as the GWA facility generates its own power.

The main sources of GHG emissions associated with GWA operations are shown in Table 3-5. In the context of this EP, GHG emissions are classified as direct and indirect emissions. GHG emissions sources that are not part of the Petroleum Activity are included as indirect emissions.

The GHG Protocol 2015 defines indirect GHG emissions as 'emissions that are a consequence of the activities of the reporting entity but occur at sources owned or controlled by another entity.' For the purposes of this EP, the reporting entity is the GWA offshore facility and emissions from facility processes are considered direct emissions sources. Emissions associated with support vessels and helicopter operations are considered indirect emissions sources included as part of the Petroleum Activity, as is onshore processing.

Direct atmospheric and GHG emissions

Direct emissions generated from the GWA facility during the Petroleum Activity include emissions from combustion equipment and generators, flares, fugitives and process vents. Direct emissions and combustion products typically include CO_2, water vapour, NOx, SO_2, methane, refrigerant gases, particulates and VOCs.

A summary of direct GHG emissions reported over the previous four financial years is provided in Table 6-15. Estimates for GHG emissions are informed by NGER data for all relevant direct emissions sources from FY22 onwards. Forecast emissions are expected to vary over the life of the EP in response to changing operational conditions, including facility configuration, production and compression requirements as well as planned and unplanned shutdown activity. Emissions estimates may also change in response to prescribed updates to NGER reporting methodologies and emissions factors.

Table 6-15: Four-year GWA facility GHG (NGER) emissions summary

	FY22	FY23	FY24	FY25
Flared gas				
Tonnes	14,683	12,697	9,937	10,838
CO_2 (t)	39,644	34,281	26,829	29,264
CH_4 (tCO_2-e)	1,953	1,689	1,322	1,442
N_2O (tCO_2-e)	382	330	258	282
Total CO_2-e (t)	41,979	36,300	28,408	30,987
Fuel gas				
m^3	58,656,114	57,662,852	47,849,941	50,223,018
CO_2 (t)	118,487	116,480	96,658	101,452
CH_4 (tCO_2-e)	231	227	188	197
N_2O (tCO_2-e)	69	68	56	59
Total CO2e (t)	118,786	116,775	96,902	101,708
Diesel				
m^3	778	244	802	1,106
CO_2 (t)	2,098	659	2,164	2,984
CH_4 (tCO_2-e)	3	1	3	4
N_2O (tCO_2-e)	6	2	6	9
Total CO2e (t)	2,107	661	2,174	2,996
Fugitives				
Fugitives (tCO_2-e)	3,339	3,204	3,190	3,019
Total				
Total (tCO_2-e)	166,211	156,940	130,674	138,711
Total ($MtCO_2$-e)	0.17	0.16	0.13	0.14

Historical emissions data are presented on a financial year (FY) basis, consistent with NGER obligations. Forecast emissions are presented on a calendar year (CY) basis, consistent with Woodside's operational forecasting,

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emissions planning and performance reporting processes. Although the reporting periods differ, both datasets are presented to provide context on historical performance and the expected future emissions profile of the facility.

Variability in annual emissions for the FY data presented above reflects changes in production rates, compression demand, shutdown activity, flaring performance and diesel consumption. The lower emissions reported in FY24 and FY25 generally reflect reduced production throughput relative to FY22 and FY23, while fluctuations in diesel use are influenced by operational and maintenance activities undertaken during the reporting period. Looking forward, the forecast emissions profile is expected to increase compared with recent historical performance. This is primarily due to declining reservoir pressure, which is expected to increase compression requirements and associated power demand. Future operational requirements are therefore expected to result in higher forecast emissions than those reported in the recent FY historical dataset.

Emissions reduction and energy optimisation opportunities

Woodside continuously evaluates and implements practicable emission reduction and energy optimisation opportunities through the Production Optimisation and Opportunity Management Procedure (POOMP) process (Section 7.2.7.6.1). The POOMP provides a structured framework for identifying, screening, and implementing operational efficiency and emissions reduction initiatives.

Opportunities are assessed for technical feasibility, operational risk, cost and environmental benefit to ensure emissions reduction and energy optimisation measures are implemented where reasonably practicable.

For mature offshore facilities such as GWA, changing reservoir pressure conditions and increasing compression demand may result in increased fuel gas consumption, direct emissions and emissions intensity over time. Accordingly, POOMP initiatives focus on operational efficiency, energy optimisation and reduction of emissions where reasonably practicable, rather than achievement of continuous year-on-year reductions in direct facility emissions.

Emissions reduction and energy optimisation initiatives implemented or progressed through assessment under the POOMP are summarised in Table 6-16. Several opportunities identified through the POOMP process have been incorporated into broader facility optimisation and LLPO-related modification scopes. POOMP opportunities continue to be reviewed against operational requirements, facility configuration, emissions performance and practicability considerations over the life of the EP.

Table 6-16: Emissions reduction activities implemented at GWA since 2016 and currently under assessment

Activity	Estimated emissions benefit (kT CO_2-e/pa)	Status
Turn off T100 stripping gas compressor (until GWF4 RFSU)	8.5	Implemented Q2 2025
Remediate passing BDV / PV to flare	3.3	Implemented Q2 2025
T100 reduced operating pressure	No net reduction, reduces intensity	Implemented Q4 2025
Load shedding system upgrade	Est 2.5	Planned 2028 as part of LLPO
N2 purge prior to flare ignition	Est 10	Assess
Tie in SGC vent to flare	Est 5	Assess, post GWF4 RFSU
Retirement of T100 Glycol Contactor and regeneration	Est 0.8	Assess, target 2031

Several initiatives identified through the POOMP process have been implemented to improve operational efficiency, reduce flare and fuel gas consumption, or reduce emissions intensity during the operational life of the facility. Other initiatives remain under technical, operational or economic assessment, or have been incorporated into broader LLPO and facility optimisation projects. Opportunities continue to be periodically reviewed against operational requirements, facility configuration, emissions performance, operational risk and practicability considerations over the life of the EP.

Fuel gas and diesel combustion

Fuel gas consumption for compression and power generation has been the largest source of combustion emissions from the GWA facility to date making up approximately 70-80% of total emissions. The primary use of fuel gas is for gas export compressors and the GTGs that supply power to the facility. Diesel is used for firewater pumps, emergency generators, cranes and back-up fuel for the turbine generators. Diesel may also be used for start-up or abnormal operating conditions if fuel gas pressure is insufficient.

Fuel gas usage is expected to increase over time as additional compression is required to support production under declining reservoir pressure. Operation of GWF4 and two future tie-in production wells covered by this EP is not expected to result in a material increase in fuel gas consumption relative to the forecast production profile, as the

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developments supplement production from declining reservoirs and do not require a material increase in combustion equipment capacity (e.g. additional GTGs).

Diesel use is expected to vary over the EP period, with higher consumption during common shutdowns and extended shutdowns associated with major project activities such as LLPO installation. In these years, diesel consumption may be up to 1,500 m^3 per annum (excluding support vessels), equivalent to approximately 4,065 tonnes of CO_2-e (Table 6-17). Outside of planned shutdown years, diesel use is expected to be lower, averaging less than 1,000 m^3 per annum. Overall, diesel consumption is expected to remain well below 1,500 m^3 per annum during normal operations.

National Pollutant Inventory Emission Estimation Techniques were applied to determine annual atmospheric emissions (NO_x, SO_x and CO) from fuel combustion on the GWA facility (Table 6-17). Greenhouse gas emissions (CO_2, CH_4, N_2O and CO_2-e) were estimated in accordance with the National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Cth) (as amended), which incorporates factors derived from the National Greenhouse Accounts Factors (NGAF).

Forecast atmospheric and GHG emissions from facility fuel combustion

Forecast emissions are based on representative operating cases for the expected facility configuration over the EP period. The pre-LLPO case reflects current operating conditions. The post-LLPO case reflects operation following implementation of LLPO, including increased compression and associated power generation requirements. Forecasts are developed on a year-by-year basis by applying the relevant operating case to the anticipated activity profile for that year.

The forecast also assumes implementation of LLPO from approximately 2028. Implementation of LLPO is forecast to result in an increase in direct GHG emissions due to increased fuel gas consumption for compression and power generation.

Forecast emissions for the EP period have been developed using representative pre-LLPO and post-LLPO operating cases. These cases incorporate the expected facility configuration, compression demand, GTG loading, diesel use, flaring assumptions and production operating profile for each operating mode. The post-LLPO case reflects the increased compression and power generation required to maintain gas export under declining reservoir pressure conditions.

Table 6-17: Estimated annual atmospheric and GHG emissions from fuel combustion at the facility pre-LLPO (2026-2027) and post-LLPO (from 2028 onwards)

	Pre-LLPO		Post-LLPO[2]			
	2026	**2027**	**2028**	**2029**	**2030**	**2031**
Fuel gas						
Tonnes	48,177	48,084	69,154	83,911	85,188	83,562
CO_2 (t)	110,840	110,628	159,104	193,055	195,992	192,253
CH_4 (tCO_2-e)	216	215	310	376	381	374
N_2O (tCO_2-e)	65	65	93	113	114	112
Total CO_2-e (t)	111,120	110,908	159,506	193,543	196,488	192,739
NO_x	444	443	637	773	785	770
SO_x	1	1	1	1	1	1
CO	114	113	163	198	201	197
Diesel						
m^3	1,000	1,500[1]	1,500[1]	1,500[1]	1,000	1,000
CO_2 (t)	2,698	4,047	4,047	4,047	2,698	2,698
CH_4 (tCO_2-e)	4	6	6	6	4	4
N_2O (tCO_2-e)	8	12	12	12	8	8
Total CO_2-e (t)	2,710	4,065	4,065	4,065	2,710	2,710
NO_x	53	80	80	80	53	53
SO_x	0	0	0	0	0	0
CO	14	21	21	21	14	14

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1 Diesel consumption is forecast to be higher during 2027–2029 due to planned shutdown activities, including the LLPO shutdown campaign.

2 Forecast emissions are based on the best available estimates of power demand, EGC throughput and operational requirements for the expected post-LLPO operating configuration. Actual emissions may vary as future production profiles, reservoir conditions and operational requirements evolve over the EP period.

The forecast increase in direct emissions associated with the post-LLPO operating case reflects the substantial increase in compression and associated power generation required to maintain gas export under declining reservoir pressure conditions at a mature offshore facility. While this results in an increase in fuel gas consumption and associated emissions relative to historical operating conditions, the selected LLPO configuration has been developed through engineering and operational assessment considering operational reliability, process safety, facility constraints, energy efficiency and continued use of existing infrastructure. Forecast emissions remain subject to ongoing operational monitoring, optimisation and review over the life of the EP.

Low pressure operations

As reservoir pressure declines over the life of the field, additional compression is required to maintain gas export to the onshore KGP. LLPO will be implemented to enable continued operation under lower pressure conditions.

The increase in emissions associated with LLPO reflects the energy required to maintain production under declining reservoir pressure conditions, rather than an increase in production throughput.

GWF4 and two future tie-in production wells and are expected to utilise available processing capacity as production from existing reservoirs declines. Consistent with the Goodwyn Area Infill Development Offshore Project Proposal, these developments are not expected to result in a net increase in emissions associated with production throughput or flaring.

However, implementation of LLPO will require increased power generation to support compression, resulting in increased fuel use and associated greenhouse gas emissions over time. These emissions are attributable to the broader operational requirement to maintain production under declining reservoir pressure.

LLPO emissions increase reflects declining reservoir pressure and increased compression demand associated with mature field operations, rather than increased hydrocarbon throughput including that which may arise from GWF4 and two future tie-in production wells covered by this EP.

For the GWA facility, emissions are primarily driven by steady-state operations and increasing compression requirements associated with declining reservoir pressure. As such, the forecast assumes continuous operations at representative production levels, which provides a more appropriate and conservative basis for estimating emissions over time.

Flaring

During normal operations, hydrocarbon gas is flared from the GWA facility via the HP and LP flare systems. These systems are maintained to effectively combust hydrocarbons as a critical component for the safe operation of the GWA facility. Combustion efficiency is maintained for low pressure flaring (the major contributor to overall flaring) by the tasks undertaken as part of the P31 Performance Standard. These tasks are undertaken to maintain flare system integrity and flare tip performance, thereby supporting effective combustion of hydrocarbons during flaring operations. The average combustion efficiency of the GWA facility flare is estimated to be approximately 98%.

Gas flaring results in emissions to the atmosphere as part of safe facility operations. Emissions associated with flaring may include CO_2, NOx, SO_2, methane, particulate matter and VOCs. Methane and VOC emissions are primarily associated with incomplete combustion and flare system inefficiencies. Incomplete combustion under certain scenarios may also generate dark smoke. Under normal operating conditions, combustion of hydrocarbon gas during flaring primarily generates water vapour and CO_2.

The release of hydrocarbon gas to the atmosphere from flaring is an essential practice, primarily as a safety requirement and comprises:

- routine flaring associated with flare system purge and pilot, process flows and glycol regeneration
- non-routine flaring that may result from activities such as planned shutdowns and emergency shutdown testing, and unplanned shutdowns and emergency shutdowns, production restarts, equipment outage/failures, subsea flowline depressurisation, and well remediation activities.

Estimated annual flaring emissions for the EP period is presented in Table 6-18. Unlike fuel gas consumption, which is expected to increase over time in response to declining reservoir pressure and increased compression requirements, flaring volumes are primarily influenced by facility operating philosophy, flare system requirements, shutdown activities and operational upsets. Accordingly, flaring volumes are expected to remain relatively stable over the EP period.

Forecast flaring emissions are within the range of recent historical performance and reflect expected operational activities during the EP period, including planned shutdowns and maintenance campaigns. Start-up of new wells covered under this EP is expected to have a relatively small impact on total flaring volumes and is not expected to materially alter forecast flaring trends.

In addition to GHG emissions from flaring, estimated atmospheric emissions are also presented in Table 6-18.

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Table 6-18: Estimated annual atmospheric and GHG emissions from flaring at the facility pre-LLPO (2026-2027) and post-LLPO (from 2028 onwards)[1].

	Pre-LLPO		Post-LLPO			
	2026	**2027**	**2028**	**2029**	**2030**	**2031**
Flared gas						
Tonnes	13,628	13,177	12,239	12,689	13,628	13,628
CO_2 (t)	36,659	35,447	32,922	34,134	36,659	36,659
CH_4 (tCO_2-e)	7,632	7,379	6,854	7,106	7,632	7,632
N_2O (tCO_2-e)	286	277	257	266	286	286
Total CO_2-e (t)	44,577	43,103	40,033	41,507	44,577	44,577
NO_x	20	20	18	19	20	20
SO_x	trace	trace	trace	trace	trace	trace
CO	119	115	106	110	119	119

1 Forecast flaring emissions are based on the expected operating profile at the time of assessment. Actual flaring may vary due to operational, maintenance and unplanned plant events.

Non-routine venting of process hydrocarbons via the flare system

In the event that flares are extinguished, the hydrocarbon gas discharged via the flare system may initially not be combusted during the period required to purge the flare system and re-establish flare ignition. This may result in the short term (typically less than 24 hours), low-rate release of hydrocarbon gas to the atmosphere. Intermittent venting from the GWA facility represents a minor source of atmospheric emissions and is not considered to lead to additional impacts beyond the routine air emissions described in this section.

Fugitive emissions

Fugitive emissions can occur from pressurised equipment, and are inherent in design. Fugitive emissions may occurdue to infrequent operational activities, or unintentional equipment leaks. Sources can include from valves, flanges, pump seals, compressor seals, relief valves, vents, sampling connections, process drains, open-ended lines, casing, tanks and other potential leakage sources from pressurised equipment.

Discrete relatively small volumes of packed gases and charged systems including refrigerant gases are used across the GWA facility. These have potential for small volume leaks (typically less than 100 kg per isolatable inventory). Refrigerants used on the facility are ozone depleting substance free, synthetic greenhouse gases and managed by licenced refrigeration technicians. The facility is also fitted with a gaseous fire extinguishing system utilising CO2 and FM200. FM200 has zero ozone depleting potential and a low global warming potential. The gaseous fire extinguishing agents are only released as demanded by the applicable safety system or for certification testing.

As the safe operation of the GWA facility relies on effective containment of hydrocarbons, fugitive emissions are expected to remain a minor component of the overall emissions inventory. Fugitive emissions, including those from subsea sources, are inherently difficult to quantify and are estimated by application of methods under the National Greenhouse and Energy Reporting (Measurement) Determination. These emissions are incorporated within the facility-level fugitive emissions estimate and are not reported as discrete emission sources.

Using this technique, the GWA facility reported fugitive emissions to be between 3,019 tCO_2-e and 3,339 tCO_2-e per year in the period FY22-FY25. This range is expected to remain representative for the EP period (next five years) and until EOFL (2040) (Table 6-15). The National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Cth) includes default estimation factors for shallow-water offshore platforms. These factors are one input to the overall facility fugitive emissions estimate and do not represent the total reported fugitive emissions for the GWA facility..

Indirect emissions

Support vessel and helicopter operations

Indirect GHG emissions are generated by facility support vessels as well as helicopters supporting the Petroleum Activity. Vessel emissions include those from internal combustion engines and fugitives as well as incinerators which may be used infrequently onboard vessels to dispose of flammable domestic wastes such as cardboard. Wastes are generally segregated and transported to shore for disposal.

Emissions may vary depending on the nature of activities being undertaken; for example, travelling or “steaming” to a destination at low speed uses less fuel and generates lower GHG and atmospheric emissions than high speed steaming. Emissions generated during safety-related vessel standby activities, holding station using DP during loading and unloading of materials to the facility or undertaking subsea IMMR work also vary. Some vessels may be dual-fuel capable and can use LNG, in which case combustion emissions are expected to be lower.

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Expected annual indirect GHG emissions for support vessels and helicopter operations have been estimated based on reported values for previous historic data:

- 2,830tCO_2-e for platform support vessel
- 1,400 tCO_2-e for IMMR vessels, based on diesel consumption
- 730 tCO_2-e for helicopters, based on Jet A1 fuel consumption in 2020

Over the EP period, ASV and HLV may be required to support facility operations and are therefore included within the EP scope. GHG emissions from an ASV, if required, would depend on several factors, including sea state, vessel size and configuration, environmental conditions, crewing levels and activity requirements. Based on these variables, estimated fuel consumption may range from approximately 6-48 tonnes per day for ASV and approximately 15 tonnes per day for an HLV.

For planning purposes, estimated GHG emissions from ASV support are approximately 9,810 tCO_2-e, based on a 90-day campaign. Similarly, an HLV with over a one-month campaign is expected to generate approximately 1,020 tCO_2- e.

Indirect emissions relating to vessels and helicopter operations is a small contribution to the total emissions profile of the Petroleum Activity and are not expected to vary materially for the duration of the EP.

Onshore processing and product end-use

Indirect emissions associated with the Petroleum Activity also arise from hydrocarbon processing (onshore), third party transport of products, regassification, distribution and combustion by end users. This stream of indirect GHG emissions associated with GWA facility operations were estimated based on operational production data, including:

- Total production – indirect emissions are proportional to total production, which varies with shutdown activity, new field tiebacks or gradual reservoir decline.
- Composition of produced gas - onshore emissions are proportional to reservoir CO_2.
- Split of saleable products from KGP – the proportion of hydrocarbons from GWA sold as LNG, condensate, domestic gas and LPG varies. Each product requires differing amounts of energy to process to the point of sale and varies based on reservoir composition, field contribution and commercial reasons.

Forecast direct and indirect GHG emissions are presented in Table 6-19. Indirect emissions from onshore processing, support vessel and helicopter operations as well as product end-use are estimated to be approximately 19.62 MtCO2-e per year, totalling up to 255.06 MtCO_2-e until EOFL (2040). These estimates are gross emissions with net emission being lower due to possible abatement or offsets applied voluntarily or through regulatory mechanisms in Australia and across the value chain and product lifecycle, including internationally. Indirect atmospheric emissions (non-GHG) are discussed in Section 6.7.8.

Table 6-19: Forecast direct and indirect emissions associated with GWA facility offshore production

Source of Impact	Annual estimated emissions (MtCO_2-e)		Total estimated emissions for EP period (MtCO_2-e)	Total estimated emissions until EOFL (MtCO_2-e)
Direct Emissions[2]				
Fuel, flaring and fugitives	Pre-LLPO	Post-LLPO	1.26[4]	3.38
	0.2[3]	0.26[3]		
Indirect Emissions[2]				
Support vessel and helicopter operations	0.005[5]		0.036	0.097
Onshore processing[1]	1.72		8.76	22.78
Third party transport of products, regassification, distribution and end-use	17.86		89.3	232.18

1 Based on 2025 production and KGP emissions intensity apportionment calculation.

2 Source: EcoInvent 3.5 database and National Greenhouse and Energy Reporting (Measurement) Determination 2008. EcoInvent v3.5 represents a large collection of inventory data. It has been recognised as emission factor source for the European Union Renewable Energy Direction GHG methodology and is aligned to the principles of the NGERS methodology.

3 Based on a standard operational year without common shutdown.

4 Based on two common shutdown years along with GWF4 and LLPO specific shutdowns until EOFL in 2040.

5 Stated ASV and HLV emissions are included in the EP period total, rather than in the annual emissions, and are counted three times for the EOFL (2040) estimation.

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Woodside's current forecast is that the reservoirs produced via the GWA facility will decline toward EOFL. Relatively high initial "plateau" production rates are expected to extend beyond the duration of this EP. This is anticipated to eventually decrease as reservoir/s are depleted towards EOFL, and emissions associated with onshore processing and third-party consumption decline as production volumes reduce over field life. This, however, is subject to reservoir performance, therefore "plateau" production rates have been estimated until EOFL, and impact assessed, to assist in accounting for this uncertainty.

Impact assessment

Air quality

Platform emissions, predominantly from fuel combustion and routine flaring, as well as emissions from support vessel and helicopter operations, have the potential to result in localised, temporary reduction in air quality, generation of dark smoke (if incomplete combustion occurs) and contribution to GHG emissions. Potential impacts of emissions depend on the nature of the emissions, as well as the location and nature of the receiving environment.

Platform design (including the rapidly dispersive characteristics of the gas turbine exhausts, flare and other emissions) and the estimated level of pollutants in emissions, as well as the absence of elevated background ambient levels have been considered in estimating the potential for interaction with human and environmental sensitivities. The Operational Area is in a remote offshore location, with no expected adverse interaction with populated areas or sensitive environmental receptors associated with air emissions.

There is a breeding BIA for the wedge-tailed shearwater overlapping the Operational Area; as such, wedge-tailed shearwaters may occur in the airshed. The nearest potential seabird roosting habitat, the Montebello Islands, are 38 km south of the Operational Area. Given the highly dispersed nature of facility air emissions, no adverse impacts to birds are anticipated due to air emissions.

Air emission impacts are not expected to have direct or cumulative impacts on sensitive environmental receptors, or above National Environmental Protection (Ambient Air Quality) Measures. Additionally, air quality around the GWA platform and on support vessels is maintained to provide a safe working environment for crew.

The offshore location of the Operational Area means the flare and potential black smoke resulting from emissions are not directly visible from the nearest landfall (Montebello Islands, 38 km south of the Operational Area at the closest point). Hence, no impacts to visual amenity for residential communities or to tourism activities are expected.

Management and abatement

Woodside's requirements for GHG emissions in the operate phase is applied to continue the identification and evaluation of emission reduction opportunities. These include application of the Emissions and Energy Management Procedure (Section 7.2.7.6) and the Production Optimisation and Opportunity Management Procedure (POOMP) (Section 7.2.7.6.1) to enable continued reduction of direct GHG emissions to ALARP. This includes a system of continual review and improvement of key emissions sources from the GWA platform and ongoing identification, screening and implementation of opportunities to reduce emissions.

Woodside recognises that forecast GHG emissions from the GWA facility are expected to increase over parts of the EP period as additional compression and associated power generation are required to support production under declining reservoir pressure, including following implementation of the LLPO project. While these changes are expected to increase absolute emissions, Woodside will continue to apply emissions and energy management processes to optimise facility performance, minimise avoidable emissions and identify practicable emissions reduction opportunities throughout the operating life of the facility.

During operate phase, Woodside's Flare Management Framework and Woodside's Methane Management strategy will also be implemented. This includes setting of annual flare and emissions targets for the asset, and annual execution of asset-specific Methane Action Plans, with discrete activities consistent with the principles of OGMP 2.0 and OGCI's Aiming for Zero Methane emissions initiative to reduce emissions to ALARP.

Net-emissions limits under the Federal Safeguard Mechanism (SGM)[35]

The Federal Safeguard Mechanism (SGM) requires Australia's highest greenhouse gas emitting facilities to reduce or limit their emissions in line with Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050. Direct and indirect GHG emissions associated with onshore processing of gas from the GWA facility (through its contribution to the North West Shelf Project Facility), as well as indirect emissions associated with the transportation and end use of gas within Australian safeguard facilities are subject to the SGM, and net emissions from these sources must be kept below a specified limit or baseline.

Safeguard facilities that exceed their baseline must manage their excess emissions, such as by surrendering Australian Carbon Credit Units (ACCUs) or Safeguard Mechanism Credits (SMCs), which are representative of one tonne of CO2-e per credit, so that net emissions are brought in line with the baseline. To ensure sufficient credits are available and that there is a means to comply, safeguard facilities that exceed their baseline are able to buy

[35] *Further information about the SGM and SGM Baselines can be found at the Clean Energy Regulator website: https://cer.gov.au/schemes/safeguard-mechanism and https://cer.gov.au/schemes/safeguard-mechanism/safeguard-baselines*

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Government-held ACCUs from the Clean Energy Regulator via the Cost Containment Measure implemented as part of recent reforms.

SGM obligations for the North West Shelf Project Facility, which include the GWA facility and onshore processing at KGP, are to be met by emissions abatement via operational controls as first preference. Options to manage residual net emissions in excess of baseline include surrendering ACCUs or SMCs, applying to become a trade-exposed baseline-adjusted facility, applying to borrow baseline from the following year or applying for a multi-year monitoring period. Surrendered carbon credits may be generated from Woodside projects, purchased from the market or purchased from the government through the Cost-Containment Mechanism.

NGERS requires Woodside to report GHG emissions and energy use from activities under its operational control. This includes continued reporting for the North West Shelf Project Facility, including the contribution from the GWA facility, in accordance with its requirements under the NGERS Act.

Carbon Management – Business Context

Woodside's carbon business was established in 2018[36] to develop and manage a portfolio of carbon credits. Woodside's priority is to avoid and reduce emissions. We utilise certified carbon credits to offset equity Scope 1 and 2 greenhouse gas emissions that are above our targets in a given year after avoid and reduce measures have been taken. We prioritise abatement at facilities before we use carbon credits as offsets.

Woodside climate targets

Woodside is targeting a reduction of net equity Scope 1 and 2 GHG emissions of 15% by 2025[37] and 30% by 2030[38], with an aspiration of net zero by 2050 or sooner. Woodside delivered its 2025 net equity Scope 1 and 2 GHG emissions reduction target.[39] Net equity Scope 1 and 2 GHG emissions reduction targets and aspiration are relative to a starting base of 6.27 $MtCO_2$-e which is representative of the gross annual average equity Scope 1 and 2 GHG over 2016–2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets, inclusive of those required to meet regulatory obligations.

There is no direct mapping of these corporate level Scope 1 targets to GWA operations. Abatement of these emissions may come from other facilities with more cost-effective or impactful abatement opportunities, or from offsets. Meeting these targets may mean additional net voluntary abatement beyond that required by the SGM described above.

Other regulatory framework for management of indirect GHG emissions from onshore processing

As described above, indirect GHG emissions will be generated by onshore processing of gas from the GWA facility. Onshore processing facilities are also subject to GHG emissions management frameworks and relevant regulatory approvals.

On 15 October 2024, the WA State Government published its updated greenhouse gas emissions policy for major projects (State policy) assessed by the EPA. Recognizing reforms that strengthened the SGM in 2023, the State policy describes that conditions to reduce net greenhouse gas emissions will no longer be applied to major proposals assessed under Part IV of the Environmental Protection Act 1986 where the proposals are subjected to alternative regulatory measures such as the SGM.

In November 2024, the EPA updated its Environmental Factor Guideline: Greenhouse Gas Emissions with consideration of 'rapidly evolving' climate science and policy and the updated State Policy. In its updated guideline, the EPA states that 'emission reductions required under the SGM are now likely to represent an "as far as practicable" reduction of, and in most cases meet its factor expectation for, covered emissions'.

Management and Abatement for Third Party Consumption (inc. Transport, Regasification, Distribution, Combustion) (Indirect)

Woodside continues to pursue a range of management and abatement measures relevant to GHG emissions associated with third party consumption of gas from GWA. These are appropriate and practicable given that Woodside does not have operational control over third party GHG emissions. Examples of initiatives Woodside is currently involved with are provided below.

Reduce

[36] Woodside Energy Carbon (Services) Pty Ltd was established in 2021.

[37] Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 MtCO2-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets.

[38] The target means that net equity emissions for the 12-month period ending 31 December 2030 are targeted to be 30% lower than starting base.

[39] Achievement of the target reflected a combination of underlying emissions performance at our facilities and the use of carbon credits. These net equity GHG emissions were 15% below the starting base for the 12-month period ending 31 December 2025.

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Methane Guiding Principles (MGP): Woodside adopted the MGP in 2018. The MGP focuses on priority areas for action to reduce methane emissions across the natural gas supply chain.

Completed activities under the MGP include:

- led the "Global Midstream Initiative" which encourages MGP members to engage and collaborate with supply chain and share best practises for methane reduction
- sponsored the first technical workshop of the Australian Energy Producers methane taskforce
- presented and participated in panels at the Global Methane Summit and International Gas Union conference

In 2025, the Methane Guiding Principles, having achieved its objectives, was retired as a standalone initiative, with key activities transferred to other organisations such as the International Association of Oil and Gas Producers (IOGP) which Woodside is a member of.

ASEAN Methane Leadership Programme: The ASEAN Methane Leadership Program (MLP) links directly to ASEAN's regional energy and climate goals through fostering collaboration among Southeast Asian countries and energy companies. The MLP aims to build capacity and drive coordinated action across ASEAN members to reduce methane emissions and align with global commitments like the Global Methane Pledge. Woodside has been involved with the ASEAN MLP since 2023.[40]

OGMP 2.0: Woodside joined OGMP 2.0 in 2024. The OGMP 2.0 is the United Nations Environment Programme's flagship oil and gas reporting and mitigation programme.[41] OGMP 2.0 is the only comprehensive, measurement-based reporting framework for the oil and gas industry that improves the accuracy and transparency of methane emissions reporting. This is key to prioritising methane mitigation actions in the sector. In 2025, Woodside submitted its inaugural report to OGMP 2.0. Our Implementation Plan was also recognised as "Gold Standard Pathway" by the UN Environment Program.

Woodside shares examples of emissions reduction initiatives being implemented on its assets with the operator of non-operated assets at governance forums and joint venture technical committee meetings. Examples have included sharing knowledge about methane measurement (such as drone observation surveys), reduction opportunities such as thermal oxidisers at the Wheatstone asset, and approach to workforce engagement on decarbonisation and identification of opportunities.

Woodside also supports customers[42] to avoid or reduce their emissions via the investment in new energy products and lower carbon services, including the progression of corporate Scope 3 targets that apply across Woodside's portfolio including:

- Scope 3 Investment Target[43]: Woodside has a Scope 3 investment target aiming to invest $5 billion in new energy products and lower carbon services by 2030[44]
- Scope 3 Emissions Abatement Target[45]: Woodside has a Scope 3 emissions abatement target, to indicate the potential abatement impact of these products and services upon customer Scope 1 or 2 emissions. This target it to take final investment decisions on new energy products and lower carbon services by 2030, with total abatement capacity of 5 Mtpa CO_2-e[46].

Substitute

Promoting and marketing the role of LNG in displacing higher carbon intensity fuels (IEA, 2019): Woodside continues to advocate LNG as a means for customers to reduce their Scope 1 and 2 emissions, in accordance with the customer nations' Nationally Determined Contribution (NDCs) (see section below). The NWS Joint Venture, including continued investment and LNG offtake by Japanese companies, as well as recent portfolio LNG sales contracts with KOGAS (Korea) and China Resources (China) in 2024, demonstrates a long-term recognition of the contribution of GWA gas to meeting global energy demand. Further, evidence of the effectiveness of this strategy across Woodside's

[40] https://aseanenergy.org/wp-content/uploads/2025/01/SPP_MLP-Booklet-Final_2025-01-22-compressed.pdf

[41] https://www.unep.org/explore-topics/energy/what-we-do/methane/oil-gas-methane-partnership-20-ogmp-20.

[42] *The customers for these products and services may be the same as the customers of our oil and gas business, directly substituting their energy for new products or directly abating the associated emissions. There may also be customers of the new products and services, without also being customers of oil and gas.*

[43] *Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment. Timing refers to financial investment decision, not start-up/operations.*

[44] *Includes pre-RFSU spend on new energy products and lower carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside's net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans.*

[45] *Same as footnote 32.*

[46] *Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance.*

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portfolio is the recent buy into the Scarborough project by Japan LNG (10% – 8 August 2023) and JERA (15.1% – 23 February 2024) with associated potential LNG offtake and collaboration on opportunities in new energy.

Advocate

Advocate for stable policy frameworks that reduce carbon emissions: Woodside aligns its advocacy to support the goals of the Paris Agreement. A list of speeches and submissions to international and domestic audiences which contain climate related content or positions in 2025 is available in the climate section of our website.

Monitor and report

Monitor and report on the global energy outlook: This will be achieved via the release of Woodside's annual disclosures.

Detailed impact assessment

Assessment of potential climate change impacts

Climate change is caused by the net global concentration of GHG in the atmosphere. Human-caused climate change is a consequence of more than a century of net GHG emissions from energy use, land use change, lifestyle patterns of consumption, and production (IPCC 2023). The IPCC has stated that observed increases in GHG concentrations since 1750 leading to climate change are unequivocally caused by human activities and that there's a near linear relationship between cumulative anthropogenic CO2 emissions and the global warming they cause (IPCC 2023). This relationship implies that reaching net zero anthropogenic CO2 emissions is a requirement to stabilize human-induced global temperature increase at any level, but that limiting global temperature increase to a specific level would imply limiting cumulative CO_2 emissions to within a carbon budget (IPCC 2023).

As stated by the IPCC, "it is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred". These impacts are summarised in the below section Climate Change – Global and Australian Context.

The Paris Agreement

The Paris Agreement is an international treaty on climate change, signed in 2016. It includes the goal to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C."

Carbon budgets "refer to the total net amount of carbon dioxide that can still be emitted by human activities while limiting global warming to a specified level" (IPCC 2023). A number of factors influence the calculation of remaining carbon budgets, such as the level of global warming chosen, probability, contribution of other greenhouse gases, how much global warming has already occurred due to historical emissions. The remaining carbon budget to limit global warming to 1.5°C and 2°C was 500 $GtCO_2$ and 1350 $GtCO_2$ respectively, as calculated from 2020 (IPCC 2023).

Since 2020, a portion of this global carbon budget has been consumed by ongoing global CO_2 emissions. The Global Carbon Budget, an initiative of the Global Carbon Project of the University of Exeter "tracks the trends in global carbon emissions and sinks and is a key measure of progress towards the goals of the Paris Agreement." It is recognised by being presented at the UNFCC's Conference of Parties (COP) sessions. The last Global Carbon Budget in 2024 estimated that the remaining carbon budget for cumulative global GHG emissions to limit global warming to 1.5°C, and 2°C were 235 GtCO2, and 1,110 GtCO2, respectively, at January 2025 (50% likelihood).

GHG emissions associated with GWA are estimated to be up to 258.44 MtCO2-e until EOFL, of which approximately 22.78 $MtCO_2$-e may originate from extraction and processing in Australia. The peak projected annual extraction and processing of GHG emissions from GWA is estimated to be 1.72 $MTCO_2$-e. Noting in context, Australia's net greenhouse gas emissions from all sectors in 2025 was 458.9 $MtCO_2$-e. (DCCEEW, 2024e).These emissions will not materially or substantially contribute to either Australia's GHG emissions or global GHG emissions and are considered de minimis. Further, net emissions associated with GWA in Australia (through its contribution to the North West Shelf Project Facility) are set to be lower than these totals - with ongoing abatement via implementation of the NGERS Safeguard Mechanism which sets out an abatement trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050 (DCCEEW, 2023e).

The Australian domestic policy response to its Paris Agreement commitments is contained in multiple pieces of Commonwealth legislation (for example, Australian Registry of Emissions Units Act 2011 (Cth); Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth); Climate Change Act 2022 (Cth); National Greenhouse and Energy Reporting Act 2007 (Cth); National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth); Offshore Electricity Infrastructure Act 2011 (Cth); Renewable Energy (Electricity) Act 2000 (Cth)). There are also climate change policies at State level. Policies and mechanisms of this kind will serve as Woodside's primary means of managing GHG emissions.

The Federal SGM described in the Management and Abatement section above is the key piece of legislation that implements the Australian Government's policy for reducing emissions at Australia's largest industrial facilities. The SGM sets legislated limits. known as baselines, on the net greenhouse gas emissions of these facilities. These emissions limits will decline, predictably and gradually. Through these limits, the Australian Government aims to help achieve Australia's emission reduction targets, as committed in Australia's NDC to the Paris Agreement of 43% below 2005 levels by 2030 and net zero by 2050.

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Climate related scenarios

The use of fossil fuels for energy currently accounts for around three quarters of anthropogenic GHG emissions (IEA 2021). This means that efforts to meet climate change goals must include changes to the way that the world produces and consumes energy. These changes are referred to as the "energy transition".

The precise shape and pace of the energy transition is uncertain. It is expected to vary in different countries because they have different starting points, development requirements, resources and capabilities. However, the scale of the transition is clearer. It will take many trillions of dollars, invested over decades. The International Renewable Energy Agency estimates it will require $115 trillion of cumulative investment by 2050 (IRENA 2022).

During 2022, the world experienced what the IEA has called the "first truly global energy crisis" (UNFCCC 2022). This crisis has seen higher energy prices and in some cases constraints on access to energy supply, impacting both businesses and households. The energy crisis has led to a renewed focus on energy security and has reconfirmed that the energy transition needs to be carefully managed if it is to be fair, inclusive and ultimately successful.

Gas from GWA is understood to have an ongoing role in supporting customers' plans to secure their energy needs, while they reduce their emissions. Current uses of gas include power generation[47], heating and chemical feedstock.

In 2021, the IEA published its Net Zero by 2050: A Roadmap for the Global Energy Sector report (the NZE Scenario) (IEA 2021). The report is clear that "the route mapped out here is a path, not necessarily the path", and Woodside recognises that this is one scenario out of many. A range of pathways are considered by the IPCC.

Even in the NZE Scenario, investment in oil and gas development does not cease. The IEA estimates the need for an average $365 billion of upstream oil and gas investment every year until 2030, and $171 billion every year thereafter to 2050 is required in the NZE Scenario. The IEA cautions that "The fact that no new oil and natural gas fields are required in the NZE does not mean that limiting investment in new fields will lead to the energy transition outcomes in the NZE. If demand remains at higher levels, reduced investment would result in a shortfall in supply in the years ahead, and this would lead to higher and more volatile prices.

A range of climate pathways that limit global warming to either 1.5°C or 2°C have been published in addition to the NZE Scenario. Figure 6-3 shows the range of potential global gas consumption in these scenarios, along with forecast supply with and without new investment.

[47] *Electricity generation fuelled with natural gas typically releases about half the lifecycle amount of greenhouse gases compared to electricity generation fuelled with coal (IEA 2019). Additionally, natural gas fired electricity generation offers a flexible means of providing support to batteries and help stabilize the power grid during periods of reduced renewable energy production (e.g. at night, and when the wind is calm).*

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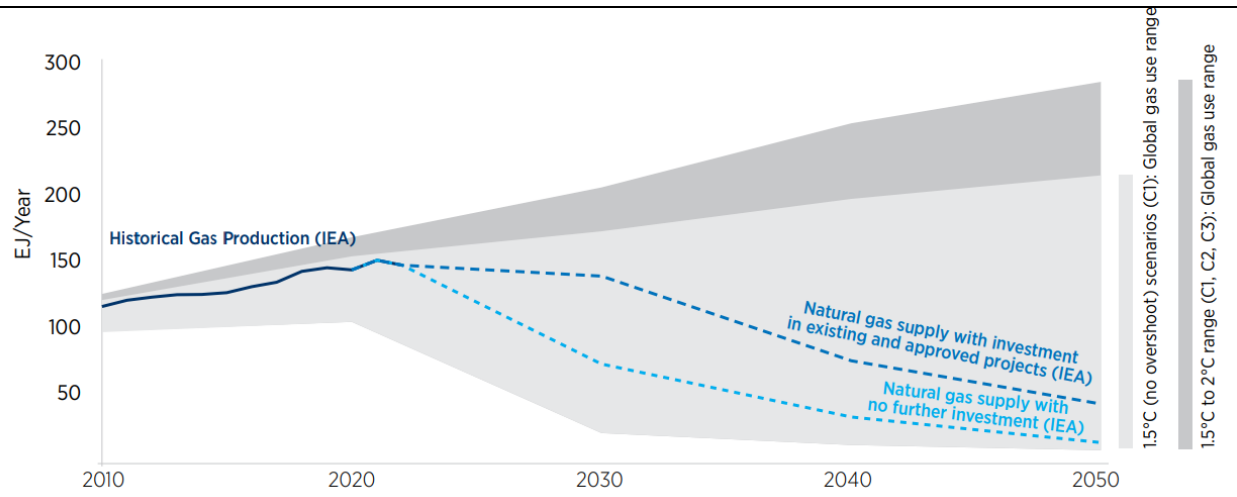


Figure 6-3: Forecast global gas use in climate pathways that limit warming to 1.5°C and 2ºC, with expected supply[48],[49],[50]

Woodside notes that the IEA has published two special reports, Emissions from Oil and Gas Operations in Net Zero Transitions and The Oil and Gas Industry in Net Zero Transitions (IEA 2023). Combined, these reports note that oil and gas operations currently account for around 15% of total energy related emissions globally, identify and advocate for opportunities for oil and gas producers to abate these emissions, and analyse broader implications for the sector through the energy transition which includes the need for increased investment in clean energy. This EP demonstrates that management and abatement measures applied reduce GHG emissions associated with the Petroleum Activity to ALARP and acceptable levels. Through meeting requirements of the SGM, direct GHG emissions and those created by onshore processing at KGP are aligned with Australia's emission reduction targets under the Paris Agreement. Further, Woodside's Scope 3 targets demonstrate how Woodside's products and services can help our customers avoid or reduce their Scope 1 or 2 emissions and therefore reduce life cycle (Scopes 1, 2 and 3) emissions intensity of Woodside's portfolio.

Woodside notes that the IEA makes the following statements in their World Energy Outlook 2024 on LNG demand in their Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS) and Net Zero Emissions by 2050 Scenario (NZE):

- In the STEPS, LNG demand increases by more than 2.5% per year over the 2023-2035 period, which is faster than overall natural gas demand but far less rapid than the average 6% per year LNG growth rate between 2013 and 2022. Around 270 billion cubic metres (bcm) of new LNG supply is currently under construction, and this will lead to a near-doubling of capacity in the United States and Qatar, which are set to dominate supply in 2035, together accounting for around 50% of global LNG trade in the STEPS by this date. This increased supply concentration is likely to put a spotlight on possible security of supply risks that might arise from extreme weather in the Gulf of Mexico and from disruption in the Middle East.
- Due to an upward adjustment to projected natural gas demand growth to 2030, LNG demand growth in the STEPS is higher than in the WEO-2023, reaching more than 700 bcm by 2035. However, this pace of growth does not keep pace with export capacity additions. As a result, a 130 bcm surplus emerges by 2030, bringing prices down in key importing regions like the European Union, China and Japan to a range between USD 6.5- 8.5 per million British thermal units (MBtu). This makes it difficult for some exporters to fully recover their long-run marginal cost of supply during this period.
- This LNG surplus narrows in subsequent years as LNG demand growth continues in the 2030s, and a supply gap emerges in 2040. By 2050, around 175 bcm of additional LNG export capacity is required in the STEPS to cover both demand growth and retiring capacity. This additional supply mainly comes from the Middle East, East Africa and North America. In the APS, projects currently under construction are sufficient to meet LNG demand: this peaks at 650 bcm in 2030, and no supply gap emerges. In the NZE Scenario, In the NZE Scenario, demand can be met in aggregate from projects existing today, without any need for additional LNG from projects currently under construction: this has a profound effect on gas prices in importing regions, which fall to around USD 5/MBtu by 2030.

Japan and Korea have significant energy- and carbon-intensive industry sectors which account for approximately 30% of GDP for each. Most energy used in industry is imported, which creates a priority for energy security during energy transitions. In the APS, energy supplies in Japan and Korea are underpinned by a variety of sources over the next decade as they pivot to increased use of clean energy sources – including renewables, nuclear and low emissions fuels – to reduce emissions and secure supply. Although the share of fossil fuels in power generation decreases through to 2035 and beyond, natural gas continues to provide stable and flexible power for both countries in light of limited domestic supply options or interconnections with neighbouring countries. Natural gas is projected to remain an

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important energy source, accounting for nearly 12% of the power mix in 2035 in the APS, though gas-fired power drops to just 3% by 2050.

It is acknowledged that information related to climate related scenarios and the energy transition are subject to change, through mechanisms such as ongoing work by the IPCC and other agencies. Woodside will stay abreast of such changes and apply change management processes as described in Section 7.2.8.

Gas's role in energy system

The IEA identifies that there are strong macroeconomic drivers for growth in natural gas consumption in emerging markets and developing economies in Asia over the next decade, at least partially driven by coal to gas switching which "helps countries with net-zero emissions targets accelerate the transition away from coal, even if renewables are the major source of emissions reductions" (IEA 2023).

In the 2019 report The Role of Gas in Today's Energy Transition, the IEA indicates that electricity generation fuelled with natural gas typically releases about half the lifecycle amount of greenhouse gases compared to electricity generation fuelled with coal (IEA 2019). Additionally, natural gas-fired electricity generation offers a flexible means of providing support to batteries and helps stabilise the power grid during periods of decreased renewable energy production (e.g. at night or when the wind is calm).

The same IEA report states that "beating coal on environmental grounds sets a low bar for natural gas, given there are lower emissions and lower cost alternatives to both fuels". However, as shown in Figure 6-3 there is ongoing demand for gas in Paris-aligned scenarios regardless of the presence or trajectory of renewable energy development.

The IPCC has noted carbon intensity (from fossil fuel combustion and industrial processes) decreased, with large regional variations, over the 2010-2019 period "mainly due to fuel switching from coal to gas, reduced expansion of coal capacity, and increased use of renewables" (IPCC 2023).

Global energy demand is expected to increase. Since the availability of gas can support the reduction of more carbon-intensive firming fuel sources such as coal, rather than displacing renewable energy, it cannot be assumed that emissions associated with customer consumption of GWA gas would be entirely additive to global atmospheric emissions.

While the US market is not expected to be customers for GWA gas, it serves as a relevant example. In an article titled Natural gas is now stronger than ever in the United States power sector, the IEA states "the switch from coal to gas and uptake of renewables has lowered emissions in the US power sector… In this period, gas-fired generation more than doubled while coal-fired generation was cut by half" (IEA 2023)

Asia has more than half of the world's people and is growing. Across Asia many countries are still heavily reliant on coal which accounts for approximately 50% of the total energy supply in the Asia Pacific (IEA 2020).

Gas also provides important input to industry, with industrial uses of gas including:

- A feedstock for ammonia and methanol production, which are used for fertiliser and consumer goods manufacturing, among other processes that fuel economic growth and an increasing population
- A source of hydrogen production for the refining and chemical industries
- A source of heat for high-temperature industrial processes, such as producing aluminium, ceramics, cement, glass and steel. Due to its high energy density and controllable combustion characteristics, gas is particularly suitable for generating high temperature heat which may not be achievable through direct electrification (International Gas Union 2023).

Woodside currently expects that natural gas will continue to have a role in the energy transition.

Consideration of likely customer markets and associated energy mixes is important to understand the context of emissions from third party consumption of GWA gas. GWA includes joint venture partnerships and is geographically positioned to provide LNG to Asian markets, which also enables lower shipping emissions. The strong demand for GWA gas, including from customer nations who have publicly stated that they intend to use LNG as part of their

[48] Charts utilise IPCC ranges for oil and gas usage in scenarios that have a 50% or greater probability of limiting warming to 1.5°C with no or limited overshoot (C1), a 50% or greater probability of returning warming to 1.5°C after a high overshoot (C2), a 67% or greater probability of limiting warming to 2°C (C3) from AR6-WG3. IPCC data representing outlooks for Primary Energy Oil and Primary Energy Gas was sourced from AR6 Scenarios Database

[49] Data points sourced from the IPCC includes 2010, 2020, 2030, 2040 and 2050. Historical data from the IEA is provided on an annualised basis. Forward looking data from the IEA includes 2030, 2040, 2050. Woodside has used interpolation of the IEA and IPCC data points in intervening years. This is a work derived by Woodside Energy Ltd from IEA material and Woodside Energy Ltd is solely liable and responsible for this derived work. The derived work is not endorsed by the IEA in any manner. IEA data was converted to exajoules using conversion factors obtained from the IEA report; The Oil and Gas Industry in Net Zero Transitions, IEA 2023. IEA and IPCC scenarios are not predictions or forecasts and are representative of views of the future. Woodside's approach to analysing and assessing future energy market conditions is based on qualitative and quantitative factors and may vary from any one scenario presented by the IEA or IPCC.

[50] IEA, 2023. "The Oil and Gas Industry in Net Zero Transitions", https://www.iea.org/reports/the-oil-and-gas-industry-in-net-zero-transitions, License: CC BY 4.0.

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approach to meeting their Paris Agreement commitments (see the next section below), some of which already receive LNG from the GWA facility, indicate that it is possible for GWA gas to have a role in reducing global emissions.

The International Energy Agency (IEA) forecasts suggest that most future gas demand in Asia is China, India, Japan, Korea and other developing regions. These regions are existing or likely customer markets for the purpose of evaluating the role of gas from GWA in existing energy mixes. This does not preclude the sale of gas from GWA to other customers.

Customer markets' nationally determined contribution (NDC)

The emissions associated with the consumption of GWA gas along with other feed sources in customer markets will be considered under domestic and international emissions control frameworks. Anticipated and existing customers of gas from GWA are in countries that are parties to the Paris Agreement. Under the Paris Agreement and global GHG accounting conventions, each country is responsible for accounting for, reporting and reducing emissions that physically occur in its jurisdiction. As described in the Management and Abatement section above, Woodside will seek to minimise these emissions as appropriate to our level of control.

The Paris Agreement requires countries to publish NDCs which outline their commitments towards achieving the goals of the Agreement. GHG emissions associated with customer use in countries that have ratified the Paris Agreement are considered under relevant national plans, summarised along with other policies below:

- Japan: "Japan aims to reduce its greenhouse gas emissions by 46 percent in fiscal year 2030 from its fiscal year 2013 levels, setting an ambitions target which is aligned with the long-term goal of achieving net zero by 2050." Japan also published an "Outline of Strategic Energy Plan" in October 2021. This plan assumes that LNG, while reducing from 37% in 2019, still makes up 20% of Japan's electricity generation mix in 2030.
- The People's Republic of China: "China would scale up its NDC by adopting more vigorous policies and measures and aims to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060." It goes on to state that "energy storage and gas-powered electricity will be stepped up rapidly"
- Republic of Korea: "The Republic of Korea is seeking to dramatically phase down coal-fired power generation while ramping up renewable power. Aged coal power plants will be shut down or shift their fuels from coal to Liquefied Natural Gas (LNG)."

Woodside's analysis of the NDC and key policy documents of key customer nations is that LNG has an important role in supporting their decarbonisation plans under the Paris Agreement. If the introduction or continuation of GWA LNG into the global energy market serves to reduce GHG emissions elsewhere, then in Woodside's view the full volume of GHG emissions associated with the activity are not expected to be additive to global GHG concentrations.

Gas' role in Australia's energy market

Domestic users of GWA gas are expected to be subject to Australia's GHG framework which reflect Australia's NDC, such as the SGM which applies to Australia's largest industrial facilities.

The primary product from GWA is LNG. However, GWA also contributes to the WA domestic gas network through production of pipeline domestic gas.

The emissions intensity of gas-fuelled electricity generation in Western Australia can be compared to other fuels data published by the Clean Energy Regulator (CER 2024). This includes data for designated generation facilities only, which according to the CER are facilities "where the principal activity is electricity production." This data is summarised in Table 6-20.

Table 6-20: Comparative emissions intensity of different energy sources in Western Australia, 2022 2023 financial year

Primary Fuel	Total Generation (million MWh)	Scope 1 and 2 Emissions ($MtCO_2e$)	Emissions Intensity (tCO_2e/MWh)
Natural Gas	13.89	7.95	0.57
Coal	6.23	5.33	0.86
Oil, Diesel	0.10	0.06	0.65
Solar, Wind, Hydro	3.79	0.00	0.00
Other	0.10	0.01	0.08
Total	24.10	13.35	0.55

Table 6-20 shows that the GHG emissions intensity of gas-fuelled electricity generation in WA is approximately 30% lower than coal-fuelled electricity generation, and comparable to that of the total aggregated electricity generation. This may continue to change, for example as the portion of electricity generated from zero-carbon sources increases.

As stated by the Australian Energy market Operator:

[the 2023 data shows] strong growth in electricity demand, driven by electrification, electric vehicle uptake, and new energy-intensive industries including green hydrogen production. Several of these trends lead to reduced gas

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consumption. However, increases in expected electricity consumption, coupled with the phased closure of state-owned coal power stations has a corresponding impact on modelled use of gas-powered generation to support the transition to a majority-renewables power system

and

Pressures associated with future coal supply and the planned retirements of coal-fired generation, are expected to increase the reliance of the South West Integrated System gas powered generation (GPG) fleet, and GPG is expected to play an important role, along with renewables, storage and supporting transmissions infrastructure, in ensuring the reliability in the SWIS as the energy transition continues. (AEMO 2023)

Continuing operations of NRC and associated KGP will deliver more gas to the WA market, at a time when WA is predicted to face supply shortages. According to 2022 WA Gas Statement of Opportunities report by Australian Energy Market Operator (AEMO) it is forecast there will be insufficient gas supply to meet WA demand. NRC gas will continue to help to address the anticipated forecast supply gap in the WA domestic gas market.

GWA contribution to global GHG concentrations

GWA operations create Scope 1 GHG emissions from the Petroleum Activity and Scope 3 emissions associated with onshore processing at KGP.

The remaining carbon budget to limit global warming to 1.5°C and 2°C was 500 $GtCO_2$ and 1,350 $GtCO_2$, respectively, as calculated from 2020 (IPCC 2023).

Since 2020, a portion of this global carbon budget has been consumed by ongoing global CO2 emissions. The Global Carbon Budget, an initiative of the Global Carbon Project of the University of Exeter "tracks the trends in global carbon emissions and sinks and is a key measure of progress towards the goals of the Paris Agreement." The University of Exeter presented at the UNFCC's Conference of Parties (COP) sessions. The last Global Carbon Budget in 2024 estimated that the remaining carbon budget for cumulative global GHG emissions to limit global warming to 1.5°C, and 2°C were 235 $GtCO_2$, and 1,110 $GtCO_2$, respectively (50% likelihood).

As described above, LNG can have a role in displacing higher carbon intensity fuels and lowering carbon intensity of existing energy mixes, and key customer nations have stated that LNG has an important role in supporting their decarbonisation plans under the Paris Agreement. If the continuation of GWA LNG into the global energy market serves to reduce GHG emissions elsewhere, then the full volume of GHG emissions associated with the activity may not be additive to global GHG concentrations.

To facilitate a comparison against carbon budgets, a hypothetical scenario is considered where GHG emissions associated with GWA are treated as entirely additive. This scenario is not expected to eventuate due to the reasons described above. The estimated GWA GHG emissions over the expected remaining life of the development are compared with remaining carbon budgets expected to achieve the goals of the Paris Agreement below. Additionally, no allowance is given for future abatement of GHG emissions associated with the facility (such as through future abatement opportunities or future policy requirements), or changes to the carbon budgets which are known to be estimates only. As described above, the carbon budgets are developed based on CO_2 only, however. the comparison below conservatively considers all GHG emissions from the facility normalised as CO_2-e, the vast majority of which are CO_2 (Table 6-21).

Table 6-21: Comparison of potential lifecycle GHG emissions associated with the GWA offshore operations to global carbon budgets, assuming they are additive

Source	Estimated GHG Emissions until EOFL[1] ($MtCO_2$-e)	Proportion of remaining global carbon budget – achieving 1.5°C (235 $GtCO_2$)	Proportion of remaining global carbon budget – achieving 2°C (1,110 $GtCO_2$)
Direct emissions Support vessels and helicopter operations	3.38	0.00%	0.00%
Onshore hydrocarbon processing	22.78	0.01%	0.00%
Third party transport of products, regasification, distribution and end use	232.18	0.10%	0.02%
Total	258.44	0.11%	0.02%

1 Based on EOFL in 2040.

Emissions associated with onshore processing of GWA gas is also subject to GHG frameworks which are expected to reduce the estimate from the gross figure used, such as the SGM (through its contribution to the North West Shelf Project Facility).

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Assuming the scenario in which all GHG emissions associated with potential remaining GWA field life are additive to global GHG gas concentrations, which they may not be, GWA's contribution to the global carbon budget required to meet the goals of the Paris Agreement is de minimis.

Climate change – global and Australian context

Climate change is caused by the net global concentration of greenhouse gases in the atmosphere. Noting that human-caused climate change is a consequence of more than a century of net GHG emissions from energy use, land use change, lifestyle patterns of consumption, and production (IPCC 2023), the following contextual evaluation of Climate Change impacts is provided.

Climate science is a rapidly evolving field in which new observations continue to deepen understanding of the current and potential impacts of global warming, and the possible pathways for mitigation and adaptation.

The CSIRO State of the Climate 2024 Report (CSIRO, 2024) draws on the latest national and international climate research, encompassing observations, analyses and future projections to describe year-to-year variability and longer-term changes in Australia's climate. Key points from this report on measured warming trends and forecast trajectories include the following:

- Australia's climate has warmed by an average of 1.51 ± 0.23°C since national records began in 1910.
- Sea surface temperatures have increased by an average of 1.08°C since 1900.
- The warming has led to an increase in the frequency of extreme heat events over land and in the oceans.
- Mass coral bleaching is a stress response of corals occurring primarily due to elevated ocean temperature, with five bleaching events associated with marine heatwaves occurring on the Great Barrier Reef over the past 10 years: in 2016, 2017, 2020, 2022 and 2024. In 2016, bleaching was associated with then record high sea surface temperatures, which in turn led to the largest recorded mass bleaching to date on the Great Barrier Reef.
- The 2022 event was the first time that mass bleaching occurred on the Reef during a La Niña year. Accumulated thermal stress during the 2024 event was higher than in 2016, although the full impact in terms of bleaching is still being assessed.
- In 2022 bleaching was also observed on some reefs on Australia's west coast, including Ningaloo Reef. This was due to warm ocean temperatures, driven by the 2021–2022 La Niña. The region's previous severe marine heatwave was driven by the 2010–2011 La Niña, which resulted in bleaching being recorded for the first time on Ningaloo and the closure of several Western Australian fisheries.
- In the south-west of Australia there has been a decrease of around 16% in April to October rainfall since 1970. Across the same region, May to July rainfall has seen the largest reduction, by around 20% since 1970.
- In the south-east of Australia, there has been a decrease of around 9% in April to October rainfall since 1994.
- Heavy short-term rainfall events are becoming more intense.
- There has been a decrease in streamflow at most gauges across Australia since 1970.
- There has been an increase in rainfall and streamflow across parts of northern Australia since the 1970s.
- There has been an increase in extreme fire weather, and a longer fire season, across large parts of the country since the 1950s.
- There has been a decrease in the number of tropical cyclones observed in the Australian region since at least 1982.
- Snow depth, snow cover and number of snow days have decreased in alpine regions since the late 1950s.
- Oceans around Australia are becoming more acidic, with changes happening faster in recent decades.
- Sea levels are rising around Australia, including more frequent extreme high levels that increase the risk of inundation and damage to coastal infrastructure and communities.
- The CSIRO report states that in the coming decades; Australia will experience ongoing changes to its weather and climate which are projected to include:
- Continued increase in air temperatures, with more heat extremes and fewer cold extremes.
- Continued decrease, on average, in cool season rainfall across many regions of southern and eastern Australia, which will likely lead to more time in drought.
- More intense short-duration heavy rainfall events even in regions where the average rainfall decreases or stays the same.
- Continued increase in the number of dangerous fire weather days and a longer fire season for much of southern and eastern Australia.
- Further sea level rise and continued warming and acidification of the oceans around Australia.
- Increased and longer-lasting marine heatwaves that will affect marine environments such as kelp forests and increase the likelihood of more frequent and severe bleaching events in coral reefs around Australia, including the Great Barrier Reef and Ningaloo Reef.

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- Fewer tropical cyclones, but with higher intensity on average, and greater impacts when they occur through higher rain rates and higher sea level.
- Reduced average snow depth in alpine regions, but with variations from year to year.

The IPCC is the United Nations body for assessing the science related to climate change and finalised the Sixth Assessment Report (AR6) in 2023. This consists of three Working Group contributions and a Synthesis Report. A summary of outcomes of the working group's contributions comprises a range of matters, which amongst others include:

- The AR6 Working Group I (AR6-WG1) report stated that it is unequivocal that there is human-induced warming. It also stated that increased atmospheric carbon dioxide (CO2) levels, generated by human activity, are the largest driver of warming over the longer term, and that there are a range of factors, including emissions of methane, which increase warming in the short-term.
- The AR6 Working Group II (AR6-WG2) report stated that human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability. It stated that global warming, reaching 1.5°C in the near-term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans. The report noted that societal choices and actions implemented in the next decade will determine the extent to which medium- and long term pathways will deliver climate resilient development.
- The AR6 Working Group III (AR6-WG3) report provided an updated global assessment of climate change mitigation progress and pledges and examined the sources of global emissions. It explained developments in emissions reduction and mitigation efforts and assessed the impact of national climate pledges in relation to long term emissions goals. More than 2000 quantitative emissions pathways were submitted to the IPCC, of which 1202 scenarios included sufficient information for assessing the associated warming. The report found that there are many pathways in the literature that likely limit global warming to 2°C with no overshoot, or to 1.5°C with limited overshoot. These variations occur because, while climate science is able to calculate a 'carbon budget' of net emissions before any particular temperature outcome is reached, the allocation of this budget between different human activities requires additional judgements about for example technology, economics, consumer preferences and policy choices.
- The AR6 Working Group I (AR6-WGI) report states "[climate change is a global phenomenon, but manifests differently in different regions" (IPCC 2021b). IPCC projections for climate change in Australia from the AR6 Working Group II (AR6-WGII) report include:
    - further climate change is inevitable, with the rate and magnitude largely dependent on the emission pathway (very high confidence)[51]
    - ongoing warming is projected, with more hot days and fewer cold days (very high confidence)
    - further sea level rise, ocean warming, and ocean acidification are projected (very high confidence)
    - less winter and spring rainfall is projected in southern Australia, with more winter rainfall in Tasmania, less autumn rainfall in southwestern Victoria and less summer rainfall in western Tasmania (medium confidence), with uncertain rainfall changes in northern Australia
    - more extreme fire weather is projected in southern and eastern Australia (high confidence)
    - increased drought frequency is projected for southern and eastern Australia (medium confidence)
    - increased heavy rainfall intensity is projected, with fewer tropical cyclones and a greater proportion of severe cyclones (medium confidence) (Lawrence et al., 2022).
    - The AR6-WGII also contains information about projected impacts to health and well-being for the Australasian region including, amongst others:
    - detrimental effects on human health due to heat stress, changing rainfall patterns including floods and drought climate-sensitive air pollution (including that caused by wildfires) (high confidence) and vector-borne diseases (medium confidence)
    - vulnerability to detrimental effects of climate change will vary with socioeconomic conditions (high confidence) (Lawrence et al. 2022).

For further information related to Woodside's approach to climate change, please see Section 5.3 'Managing Physical Risk' and Section 6.3 'A Just Transition' of Woodside's Climate Transition Action Plan and 2023 Progress Report.

The AR6-WGII report identified nine key climate risks for the Australasian region:

- loss and degradation of coral reefs and associated biodiversity and ecosystem service values in Australia due to ocean warming and marine heatwaves (very high confidence)

[51] A level of confidence is expressed using five qualifiers: very low, low, medium, high, and very high. For a given evidence and agreement statement, different confidence levels can be assigned but increasing levels of evidence and degrees of agreement are correlated with increasing confidence (Lawrence et al., 2022).

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- loss of alpine biodiversity in Australia due to less snow (high confidence)
- transition or collapse of alpine ash, snow gum woodland, pencil pine and northern jarrah forests in southern Australia due to hotter and drier conditions with more fires (high confidence)
- loss of kelp forests in southern Australia due to ocean warming, marine heatwaves, and overgrazing by climate-driven range extensions of herbivore fish and urchins (high confidence)
- loss of natural and human systems in low-lying coastal areas due to sea level rise (high confidence)
- disruption and decline in agricultural production and increased stress in rural communities in south-western, southern and eastern mainland Australia due to hotter and drier conditions (high confidence)
- increase in heat-related mortality and morbidity for people and wildlife in Australia due to heatwaves (high confidence)
- cascading, compounding and aggregate impacts on cities, settlements, infrastructure, supply-chains and services due to wildfires, floods, droughts, heatwaves, storms and sea level rise (high confidence)
- inability of institutions and governance systems to manage climate risks (high confidence) (Lawrence et al., 2022).

An earlier report by Australia's Biodiversity and Climate Change Advisory Group summarised the potential impacts of climate change to marine and terrestrial species, habitats and ecosystems across Australia (Steffen et al., 2009). The 2009 report identified examples of observed changes in Australia's biota that were considered consistent with the emerging climate change 'signal', as genetic constitution, geographic ranges, lifecycles, populations, ecotonal boundaries, ecosystems, and disturbance regimes (Steffen et al., 2009). The report also stated:

"Biodiversity is one of the most vulnerable sectors to climate change".

"Australia's biodiversity is not distributed evenly over the continent but is clustered in a small number of hotspots with exceptionally rich biodiversity", and that these "include the Great Barrier Reef, south-west Western Australia, the Australian Alps, the Queensland Wet Tropics and the Kakadu wetlands".

Further, it was stated that *"many of the most important impacts of climate change on biodiversity will be the indirect ones at the community and ecosystem levels, together with the interactive effects with existing stressors"* (Steffen et al., 2009). Future climate change (e.g., increased temperature and decreased, but more variable, rainfall) has the potential to have a range of impacts on ecological factors and threaten biodiversity in the Australian Mediterranean ecosystem (CSIRO, 2017).

Extensive modelling and monitoring studies over the last twenty years provide considerable evidence that global climate change is already affecting and will continue to affect species (Hoegh-Guldberg et al., 2018); however, these impacts are likely to be highly species-dependent and spatially variable. The most frequently observed and cited ecological responses to climate change include species distributions shifting towards the poles, upwards in elevation and shifts in phenology (earlier and later autumn life-history events) (M. Dunlop et al., 2012). Climate change may not only change species distribution patterns but also life-history traits such as migration patterns, reproductive seasonality and sex ratios (Steffen et al., 2009).

Impacts of climate change such as altering temperature, rainfall patterns and fire regimes, are likely to lead to changes in vegetation structure across all terrestrial ecosystems within Australia (M. Dunlop et al., 2012; Steffen et al., 2009). Increases in fire regimes will impact Australian ecosystems altering composition structure, habitat heterogeneity and ecosystem processes. Changes in climate variability, as well as averages, could also be important drivers of altered species interactions, both endemic and invasive species (M. Dunlop et al., 2012). Climate change could result in significant ecosystem shifts, as well as alterations to species ranges and abundances within those ecosystems (Hoegh-Guldberg et al., 2018).

The 'loss of climatic habitat caused by anthropogenic emissions of greenhouse gases' has been listed as a key threatening process under the EPBC Act (DCCEEW, 2021). The threatening process consists of reductions in the bioclimatic range within which a given species or ecological community exists due to emissions induced by human activities of greenhouse gases (DCCEEW, 2021). The process is considered to have a continental distribution, including both terrestrial and marine areas. Ecosystems in which the process occurs include: alpine habitats, coral reefs, wetlands and coastal ecosystems, polar communities, tropical forests, temperate forests, and arid and semi-arid environments (DCCEEW, 2021).

Coral reefs were recognised by both IPCC and the Australian Government as being at risk of climate change (Lawrence et al., 2022; DCCEEW, 2021). Protected coral reef areas in Australia include those within World Heritage listed sites, such as Ningaloo Coast, Shark Bay, or the Great Barrier Reef. Climate change has been identified as a threat for each of these World Heritage areas, with potential risks to coral reef as well as other environmental values (such as marine fauna) within these ecosystems (IUCN, 2020b, 2020c, 2020a).

Climate variability and change have been identified as a threat to some EPBC Act protected species, including marine turtles, whales, seabirds and migratory shorebirds:

- The Recovery Plan for Marine Turtles in Australia (CoA 2017) states that "climate change is of particular concern to marine turtles because it is likely to have impacts across their entire range and at all life stages. Climate change is expected to cause changes in dispersal patterns, food webs, species range, primary sex ratios, habitat availability, reproductive success and survivorship".

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- The Conservation Management Plan for the Blue Whale (CoA 2015a) states that "climate change is expected to cause changes in migratory timing and destinations, population range, breeding schedule, reproductive success and survival of baleen whales, including blue whale species and subspecies".
- The Wildlife Conservation Plan for Seabirds (CoA 2022) states that "consequences to seabirds could include negative impacts from an increase in extreme weather events, reduced or changed prey abundance and distribution, and decrease in nesting habitat".
- The Wildlife Conservation Plan for Migratory Shorebirds (CoA 2015) states that "such changes have the potential to affect migratory shorebirds and their habitats by reducing the extent of coastal and inland wetlands or through a poleward shift in the range of many species".
- The Recovery Plan for the Southern Right Whale (DCCEEW, 2024a) states that "modelling the links between krill and whale population dynamics with climate change, including changes in ocean temperature, primary productivity, and sea ice, suggests future ocean conditions are likely to have a negative impact on krill populations and in association the baleen whale species that feed on them".
- The North-west Marine Parks Network Management Plan 2018 (DNP, 2018) identifies climate change as a pressure that may impact marine park values. The management plan states that "the impacts of climate change on the marine environment are complex and may include changes in sea temperature, sea level, ocean acidification, sea currents, increased storm frequency and intensity, species range extensions or local extinctions, all of which have the potential to impact on marine park values".

Within the Marine Bioregional Plan for the NWMR (DSEWPaC, 2012), pressures related to climate change are assessed as 'of potential concern' for species of marine turtle, inshore dolphins, sawfish, sea snakes, whale shark, dugong, and seabird and shorebird, as well as the KEFs and shipwrecks known to occur in the NWMR.

Summary of assessment outcomes

Overall consequence level:

GWA offshore operations (direct and indirect) GHG emissions cause a small reduction of global carbon budgets estimated to meet goals of the Paris Agreement – assigned an impact level of Negligible (F).

Climate change impacts cannot be attributed to any one activity as they are instead the result of global GHG emissions, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution started. They do not take into account the net impact of each project or activity. Even discounting the role gas can play towards customer commitments and plans to decarbonise through the energy transition, emissions associated with GWA production are expected to have a de minimis impact to global carbon budgets estimated to meet goals of the Paris Agreement.

GWA offshore operations and downstream processing facilities (through the North West Shelf Project Facility) will also comply with the Federal SGM Baseline, aligning with Australia's carbon management framework and implementation of the Paris Agreement.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Vessel operations comply with Marine Order 97 (Marine Pollution Prevention – Air Pollution).	F: Yes CS: Minimal cost. Standard Practice.	Marine Order 97 is required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class. Marine Order 97 reduces air pollution from vessels.	Control based on legislative requirements – must be adopted.	Yes **C 8.1**
National Greenhouse and Energy Reporting Scheme (NGERS) and National Pollutant Inventory (NPI) reporting – estimation of greenhouse gas, energy and criteria pollutants.	F: Yes CS: Minimal cost. Standard Practice.	Control based on legislative requirements to provide the national reporting framework for the reporting and dissemination of information related to emissions, hazardous wastes, greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production to meet the objectives and desired outcomes of the legislation(s) such as: • the maintenance and improvement of air and water quality, minimisation of environmental impacts associated with hazardous wastes; and an improvement in the sustainable use of resources; and • act as the single framework to inform policy, meet reporting requirements, avoid duplication, and to ensure that facility net greenhouse gas emissions are managed within applicable baselines.	Control based on legislative requirements – must be adopted.	Yes **C 8.2**
Apply for and manage net direct and indirect NWS GHG emissions to within the relevant baseline under the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*	F: Yes	Control based on legislative requirement utilising the national reporting framework for the reporting of information related to GHG emissions. The Safeguard Mechanism requires Operators to offset carbon emissions in excess of the relevant baseline using Australian Carbon Credit Units (ACCUs).	Control based on legislative requirements – must be adopted.	Yes **C 8.3**
Good practise				
Forecast, measure, monitor and/or estimate facility fuel	F: Yes	Minimises environmental impact of emissions through planning, ongoing review, governance and	Control is WMS requirement – must be adopted.	Yes **C 8.4**

[52] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
and flare emissions (in accordance with NGERS/NPI) to inform optimisation management practices and minimise environmental impact of direct and indirect GWA and KGP emissions.	CS: Minimal cost. Standard practice.	optimisation. It combines with good operating practice to maximise production, reduce fuel gas use and emissions to manage cost, which improves energy intensity (e.g. cleaner production), optimising emissions from the NWS. Fuel gas and flared hydrocarbons represent both emissions sources and potential product streams. Woodside therefore applies routine short and long term optimisation and opportunity management processes to identify, prioritise and implement operational efficiency and emissions reduction initiatives. This includes optimisation of fuel gas consumption, flare management, energy efficiency and power generation configuration across the integrated NWS system. Annual fuel and flare performance review and routine operational reporting support identification of trends, optimisation opportunities and verification of emissions forecasting assumptions over the life of the EP. Daily production and operational planning processes support optimisation of the integrated NWS production system, including consideration of compression demand, maintenance activities, fuel gas consumption and energy efficiency across connected infrastructure including interaction between upstream compression requirements, downstream processing constraints and overall NWS operational efficiency. Forecast emissions assumptions are reviewed against actual operational performance to support ongoing optimisation and verification of the assessed operating envelope over the life of the EP.		
Implement relevant methane management at GWA	F: Yes CS: Some cost associated with implementation of a new WMS guideline on an	Methane management measures at GWA align with Woodside's corporate approach to methane emissions management as appropriate including current OGMP and Near-Zero	Control is a WMS requirement – must be adopted.	**Yes** **C 8.5**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	offshore facility. Can be managed by proving technology application and process at onshore facilities and sharing learnings.	requirements to deliver appropriate and proportional identification and reduction effort of methane for a platform of this nature and scale.		
Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels	F: Yes CS: Fuel cost over the five year contract is considered in evaluation of responses, allowing for competitive consideration of low carbon alternatives (e.g. batteries).	Minimises cost and emissions through eco-efficiency approach recognising cost of fuel and carbon emissions over the contract term	Control effectively allocates a cost to emissions to recognise that higher emitting fuel sources with other lower operating costs do not represent overall best value.	Yes **C 8.7**
Woodside supports customers[53] to reduce their emissions via the investment in new energy products and lower carbon services, including the progression of corporate Scope 3 targets that apply across Woodside's portfolio including the following: <u>Scope 3 Investment Target[54]:</u> • Woodside has a Scope 3 investment target aiming to invest $5 billion in new energy products and lower carbon	F: Yes CS: Cost as reflected in target	Supports customers to reduce their scope 1 and 2 emissions	Proportional at a Woodside corporate level	Yes **C 9.1**

[53] The customers for these products and services may be the same as the customers of our oil and gas business, directly substituting their energy for new products or directly abating the associated emissions. They may also be customers of the new products and services, without also being customers of oil and gas.

[54] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment. Timing refers to financial investment decision, not start-up/operations.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
services (non LNG) by 2030[55]. Scope 3 Emissions Abatement Target[56]: • Woodside has a Scope 3 emissions abatement target, to indicate the potential abatement impact of these products and services upon customer Scope 1 or 2 emissions. This target is to take final investment decisions on new energy products and lower carbon services by 2030, with total abatement capacity of 5 $MtCO_2$-e per year[57] .				
Woodside will work with the natural gas value chain to reduce emissions in third party systems (e.g. regasification and distribution).	F: Yes CS: Minimal cost associated with collaboration and advocacy	Supports customers to reduce their scope 1 and 2 emissions	Proportional at a Woodside corporate level	Yes **C 9.2**
Professional judgement – eliminate				
Eliminate flaring by venting un-combusted hydrocarbons.	F: No. Routine hydrocarbon venting is not considered good industry practice; as unburnt hydrocarbons pose potential for greater	Not assessed, control not feasible.	Not assessed, control not feasible.	No

[55] Includes pre-RFSU spend on new energy products and lower carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside's net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans.

[56] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third-party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment.

[57] Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	environment impact compared to combustion emissions. The ability to flare hydrocarbons is a key safety feature on the facility. Removing the ability to flare hydrocarbons may result in unacceptable safety risks on the GWA facility. CS: Not assessed, control not feasible.			
Eliminate flaring by reinjecting un-combusted hydrocarbons.	F: No. Hydrocarbon reinjection, as opposed to transport to onshore facilities, would not be consistent with the approved Goodwyn Field Development Plan (FDP) which seeks to optimised hydrocarbon recovery whilst fulfilling North West Shelf gas supply commitments. As such, gas reinjection would not meet concept screening criteria to warrant option evaluation. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Avoid implementation of LLPO and cease	F: Technically feasible.	Would avoid the increase in fuel gas use and associated GHG	Early cessation of production was	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
production as reservoir pressure declines.	However, cessation of production would strand existing infrastructure and hydrocarbon reserves despite continued technically recoverable resources being available. CS: Significant operational and commercial sacrifice associated with early cessation of production and underutilisation of existing infrastructure and facilities.	emissions attributable to LLPO operations.	not considered proportionate given the existing facility infrastructure, continued technically recoverable reserves, operational optimisation measures implemented to reduce emissions where reasonably practicable, and the integrated management of emissions within the broader NWS system and Safeguard Mechanism framework.	
Professional judgement – substitute				
Fuel for energy generation on facility is selected for lowest emissions generation where practicable: • Fuel gas used in preference to diesel for power generation. • Battery energy storage system (BESS) operational	F: Yes, fuel gas is the primary fuel source on GWA. BESS provides back up spinning reserve enabling turning off a gas turbine, with associated fuel gas savings. CS: Cost effective.	Diesel substitution reduces CO_2 emissions for a given unit of power, and reduces spill risk associated with fuel bunkering activities. BESS has successfully delivered substitution of one gas turbine reserve supply and associated fuel, air and GHG emissions. BESS provides additional benefit of back up power in case of loss power supply.	Cost effective. Opportunities minimise fuel bunkering transfer risks.	Yes. Solution permanently implemented.
Professional judgement – engineered solution				
Maintain flare to maximise efficiency of combustion and minimise venting, incomplete combustion waste products and smoke emissions.	F: Yes. CS: Minimal cost, subject to review: e.g. Production Optimisation and Opportunity Management Procedure delivered reduction in GWA flare purge rate in 2020. Standard practice.	Flare tip integrity and ignition system functionality minimises potential for venting, incomplete combustion waste products and smoke emissions.	Control is WMS requirement – must be adopted.	Yes **C 8.6**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Installation of flare gas recovery systems to reduce emissions entering the atmosphere from flaring.	F: Yes. CS: Significant additional cost associated with the design and installation of flare gas recovery systems, including significant retrofitting of multiple stages of compression systems, coupled with associated ancillaries, valving and piping, platform modification and weight considerations. The safe addition of the required rotating equipment also poses significant production sacrifice, and potential domestic gas supply impacts due to the initial design layout and space safety constraints.	Small to negligible environmental benefit from reducing atmospheric emissions from flaring. The environmental benefit gained from the recovery of flaring emissions would be limited to only a portion of flare system flows due to process safety constraints and flare system operation over a wide design envelope (associated with flow variations). Furthermore, required retrofitting of multiple stages of compression (e.g. for LP/HP streams) would offset any environmental benefits through increased power generation emissions. The retrofitting interaction with the safety critical flare system and continued operation of gas compression would also increase platform safety risks.	Given the increased safety risk and the very low, if any, environmental benefit provided when increased power generation emissions are taken into consideration, the installation of flare gas recovery systems is considered grossly disproportionate to the environmental benefit it would provide.	No
Implementation of LLPO compression and associated power generation upgrades to maintain gas export under declining reservoir pressure conditions, including optimisation of compression and power generation configuration.	F: Yes. Additional compression and associated power generation are required to maintain gas export and stable facility operation as reservoir pressure declines. Compression and power system configuration has been developed	Maintains safe and reliable operation of the facility under declining reservoir pressure conditions, supports continued hydrocarbon recovery through use of existing infrastructure, and enables optimisation of compression and power generation efficiency within the operational constraints of a mature offshore facility.	The selected LLPO configuration reflects optimisation of operational reliability, safety, energy efficiency and facility constraints. While implementation results in increased fuel gas use and associated GHG emissions, the selected LLPO configuration	Yes **C 8.8**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	through engineering assessment considering operational reliability, process safety, energy efficiency, facility constraints and integration with existing infrastructure. CS: Significant capital and operational cost associated with compression upgrades, power generation demand, fuel gas consumption and supporting infrastructure modifications.		represents the lowest reasonably practicable emissions outcome capable of maintaining safe and reliable operation of the facility and continued hydrocarbon recovery through existing infrastructure. Alternative configurations considered were either technically infeasible, introduced disproportionate operational or safety risks, or did not provide a material reduction in emissions when assessed against the broader operational requirements of the integrated NWS system.	

ALARP statement – direct and indirect atmospheric emissions (Decision Type A)

On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2), and Woodside's criteria for demonstrating ALARP (Section 2.6.1), the adopted controls are considered appropriate to manage the potential impacts of direct and indirect atmospheric emissions resulting from the Petroleum Activity.

The adopted controls include forward-looking forecasting, routine monitoring of fuel and flare emissions, comparison of actual performance against forecast assumptions, and ongoing optimisation through Woodside's emissions and energy management processes. These measures provide ongoing verification that atmospheric emissions remain understood and managed over the life of the EP.

As no reasonable additional or alternative controls were identified that would further reduce impacts without grossly disproportionate sacrifice, direct and indirect atmospheric emissions associated with GWA operations are considered reduced to ALARP.

ALARP statement - GHG emissions (Decision Type B)

Risk-based analysis

Application of Woodside's Risk Management Procedures, implementation of the Emissions and Energy Management Procedure and Production Optimisation, Opportunity Management Procedure and the Methane Guiding Principles Management Guideline reduces GHG emissions risk to ALARP (Section 7.2.7.6). This includes a system of continual review and improvement of key emissions sources and fugitive methane from NWS assets as an integrated system, including GWA. GWA emissions reduction activities from implementation of existing procedures have resulted in ongoing energy efficiency benefits and net reductions of over 18 kt CO2-e per year (Table 6-16). Further opportunities are implemented at KGP to reduce indirect emissions associated with production of GWA and combined emissions from the NWS assets.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[52]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***

Company values

Woodside's corporate values require personnel to comply with applicable policies, standards, procedures and processes, and to be accountable for their actions in line with the Woodside Compass. As outlined above, the Petroleum Activity will be undertaken in accordance with these requirements, including the implementation of controls to manage GHG emissions.

Societal values

Consultation was undertaken for the Petroleum Activity to identify the views and concerns of relevant stakeholders, as described in Section 5. No specific concerns around air emissions, including atmospheric and GHG emissions, were identified through this process.

ALARP statement

On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision type B, Section 2.4.4.2), and Woodside's criteria for demonstrating ALARP (Section 2.6.1), the adopted controls are considered appropriate to manage GHG emissions from the Petroleum Activity (including indirect emissions sources) that Woodside can practicably influence, during the five year term of this EP. The adopted controls meet legislative requirements, including:

- Marine Order 97 for support vessels
- NGERS and NPI reporting for direct emissions attributed to the Petroleum Activity
- *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*.

Safeguard facilities that exceed their baseline must manage their excess emissions, such as by surrendering acceptable quality offsets suitably classified as Australian Carbon Credit Units (ACCUs) or Safeguard Mechanism Credits (SMCs) which is the other eligible compliance unit. Each are representative of one tonne of CO_2-e per credit, so that net emissions under the scheme are brought in line with the baseline. So that sufficient credits are available and that there is a means to comply, safeguard facilities that exceed their baseline may buy Government-held ACCUs from the Clean Energy Regulator via the Cost Containment Measure implemented as part of recent reforms.

SGM obligations for the North West Shelf Project facility (including from GWA) as defined under SGM will be met by emissions abatement via operational controls as first preference. Options to manage residual net emissions in excess of baseline include surrendering ACCUs or SMCs, applying to become a trade-exposed baseline-adjusted facility, applying to borrow baseline from the following year or applying for a multi-year monitoring period. Surrendered carbon credits may be generated from Woodside projects, purchased from the market or purchased from the Government through the Cost-Containment Mechanism.

Woodside is implementing programs at a corporate level to manage indirect emissions associated with customer use of gas from the GWA facility.

The LLPO operating configuration and associated emissions profile have been developed through engineering and operational assessment considering reservoir conditions, compression requirements, power generation demand, operational reliability, process safety, energy efficiency and existing facility constraints. Forecast emissions assumptions are reviewed against actual operational performance to support ongoing optimisation and verification of the assessed operating envelope over the life of the EP.

As no reasonable additional or alternative controls were identified that would further reduce impacts without grossly disproportionate sacrifice, GHG emissions from the Petroleum Activity that Woodside may practicably influence are considered ALARP.

Demonstration of acceptability	
Acceptability statement – atmospheric emissions: Given the adopted controls, atmospheric emissions represent a negligible impact that is unlikely to result in greater than isolated impacts as the Operational Area is located in an unpopulated area approximately 138 km from the nearest community receptor of Dampier. The adopted controls are considered good offshore industry practice and meet requirements of Australian Marine Orders and National Pollutant Inventory reporting. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of atmospheric emissions to a level that is broadly acceptable.	
Acceptability criteria and assessment	**Statement of acceptability**

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Demonstration of acceptability	
To assess and determine that impacts from GHG emissions will be of an acceptable level, Woodside considered corporate commitments, principles of Ecologically Sustainable Development, Company Values and Societal Values. The predicted GHG emissions associated with GWA are considered de minimis and as such, below acceptable levels and will not materially or substantially contribute to Australia's net GHG emissions or net global emissions levels. ***Principles of ESD*** Giving consideration to economic development that safeguards the welfare of future generations, the Petroleum Activity is considered to align with the following core objectives of ESD by: <u>Integration Principle</u> • the existing environment (Section 4) has been described consistent with the definition within Regulation 5 of the Environment Regulations (i.e. includes ecological, socioeconomic, and cultural features), and any relevant values and sensitivities have been included within this impact analysis; therefore, the impact assessment process inherently includes economic, environmental and social considerations. • indirect GHG emissions associated with GWA will be managed to ALARP and an acceptable level through the implementation of the controls detailed in this section. • Feedback, objections and claims from Relevant Persons were considered, see Appendix F. <u>Precautionary Principle</u> • there is some scientific uncertainty associated with the projection of climate change trends, the predicted and observed environmental effects of climate change, and the changing regulatory and social requirements and/or expectations. • Woodside has committed to management and mitigation measures for GHG emissions to ensure that GWA continues to manage GHG emissions to an ALARP and acceptable level. <u>Intergenerational Principle</u> • continue to provide LNG as a source of fuel for global markets and pursue the development of new energy products and lower carbon services with reference to the UN Sustainable Development Goal 7, Affordable and Clean Energy. • gas having the potential to contribute to an incremental reduction in global GHG emissions by displacing more carbon intensive power generation (e.g. coal), firming up renewables, or in hard-to-abate sectors. • Woodside considers that this development is aligned with its goals for supporting the energy transition and is compatible with the Paris Agreement goal to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C." <u>Biodiversity Principle</u> • the existing environment (Section 4) identifies and describes relevant MNES, as defined in Regulation 7(3) of the Environment Regulations; any relevant values and sensitivities are included in the contextual evaluation of climate change. • As described above the estimated GHG emissions associated with GWA will have a de minimis contribution the net atmospheric global GHG concentrations and therefore are not expected to affect biodiversity. Woodside looks after the communities and environments where we operate. Risks are inherent in petroleum activities; however, through sound management, systematic application of policies, standards, procedures and processes.	GHG emissions associated with the GWA facility are managed to an acceptable level by meeting (where they exist) legislative requirements, industry codes and standards, applicable company requirements, and industry guidelines, and these have been adopted as key controls. Even discounting the role gas can play towards customer commitments and plans to decarbonise through the energy transition, emissions associated with the Petroleum Activity are negligible in the context of existing and future predicted global GHG emissions. As described above, even in the hypothetical scenario when taken to be wholly additive, the GHG emissions created by and associated with the Petroleum Activity represent a de minimis contribution to the carbon budgets estimated to achieve the goals of the Paris Agreement. Further, through its contribution to the North West Shelf Project Facility, the GWA facility will comply with the relevant Australian carbon management framework, for example the SGM. The impact on national and international emission reduction targets is therefore acceptable. In summary, the predicted level of impact to air quality and socio-economic values is considered to be of an acceptable level (consequence level F – No lasting effect), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for

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Internal Context

The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including:

- Woodside Health, Safety and Environment Policy (Appendix A)
- Woodside Risk Management Policy (Appendix A)
- Woodside Climate Policy (Appendix A)
- Woodside 2023 Climate Transition Action Plan and Progress Report, a 2024 Climate Update, and 2025 Climate and Sustainability Summary
- Woodside being a signatory to the Aiming for Zero Methane Emissions Initiative, the Oil and Gas Methane Partnership 2.0 and the World Bank's Zero Routine Flaring by 2030 Initiative for oil projects, which are voluntary, international multi stakeholder partnerships between industry and non-industry organisations.
- Deployment is applied consistent with OGMP 2.0 principles on a risk-based approach for the most effective deployment of resources and effort to identify and reduce streams which make the most proportional difference - with a methane management strategy for the integrated North West Shelf Project facilities, including offshore at GWA.
- WMS requirements such as the GHG emissions and Energy Management Procedure, Production Optimisation and Opportunity Management Procedure (Section 7.2.7.6.1). This is achieved by implementing tools to identify, evaluate, implement and review emissions reductions projects.

External Context

GHG emissions are a global concern, and as such Woodside has undertaken an impact assessment of GHG associated with the GWA facility and identified key measures to manage GHG emissions to an acceptable level.

According to Wood Mackenzie Energy Research Consultancy, LNG from Woodside operated facilities is amongst the lowest carbon intensity in the world delivered into North Asia[58].

The global consensus on climate change led to the implementation of the Paris Agreement. The aim of the Paris Agreement, as stated in the Article 2.1(a) is to hold the increase in global average temperature to well below 2°C above pre-industrial levels. The Agreement also aims to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.

Paris Agreement text extract[59]:

"Article 2

1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising this would significantly reduce the risks and impacts of climate change;"

This was reaffirmed in December 2023 in the COP28 decision text on the First global stocktake[60]. The text further recognised that the transition away from fossil fuels in energy systems is to be done in a just, orderly and equitable manner accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science[61]. It also recognises transitional fuels can play a role in facilitating the energy transition while ensuring energy security[62].

The Paris Agreement establishes a framework where countries make nationally determined contributions to manage and reduce their own emissions.

Australia has ratified the Paris Agreement and has set a target to reduce emissions by 43% below 2005 levels by 2030 and to reach net-zero emissions by 2050. Australia's emissions projections under a 'with additional measures' scenario is projected to be 42.6% below 2005 levels by 2030, the next waypoint to net zero emissions by 2050 (DCCEEW 2024b).

relevant WHPs, AMPs and recovery plans

- the predicted level of impact has been reduced to ALARP.

To manage impacts to air quality and socio-economic values to an acceptable level the following EPOs have been applied:

EPO 8a: GWA facility GHG emissions shall assist in NWS Project Facility achieving GHG reductions under reformed Safeguard Mechanism (inclusive of legislated net zero emissions by 2050).

EPO 8b: Air quality from direct atmospheric emissions will be limited to planned impacts and activities described as part of the Petroleum Activity.

EPO 8c: Minimise GHG emissions from support vessels through efficient fuel usage and consideration of fuel types utilised[63].

EPO 9: Woodside will support customers to reduce their GHG emissions.

The adopted controls are considered appropriate to manage the impacts of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

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Demonstration of acceptability	
GWA offshore (direct GHG) and indirect onshore third party processing facilities (through the North West Shelf Project Facility) are also subject to complying with the SGM to manage net emissions under the scheme in line with Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050. Australia's Long-Term Emissions Reduction Plan (DISER, 2021) presents Australia's whole-of-economy plan to achieving net zero emissions by 2050 with priority technologies estimated to achieve 85% reduction and yet-to-be identified emerging technologies abating the remainder. The plan identified LNG as a critical transition fuel and expects growth in the sector with higher use in 2030 than it is today but acknowledging that growth will depend on the preferences of customers and the pace of international action (DISER, 2021). Climate science has drawn a link between cumulative emissions of greenhouse gases and global temperature levels. The link between cumulative emissions and temperature levels allows a carbon budget to be calculated. This is the remaining amount of net emissions (i.e., all global sources of emissions minus all global sinks of emissions) that can occur before today's concentration of greenhouse gases increases to the concentration associated with potential temperature outcomes. Assuming the scenario in which all GHG emissions associated with GWA are additive to global GHG gas concentrations, which they may not be, the activity's contribution to the carbon budget required to meet the goals of the Paris Agreement is de minimis. However, the distribution of this carbon budget across different human activities requires additional judgements about a wider range of social, economic and technological factors and consumer and policy choices. Strategies to achieve emissions reductions include transitioning from fossil fuels without CCS to very low- or zero-carbon energy sources, such as renewables or fossil fuels with CCS, demand side measures and improving efficiency, reducing non-CO_2 emissions, and deploying carbon dioxide removal (CDR) methods to counterbalance residual greenhouse gas emissions. Pathways to limit warming therefore show different combinations of sectoral mitigation strategies consistent with a given warming level. As a result, the demand for oil and gas in climate-related scenarios that could limit global warming to 1.5°C or 2°C is uncertain. For example, in the AR6-WG3 report, the IPCC stated that in pathways that limit warming to 1.5°C (with a greater than 50% probability and with no or limited overshoot) the potential global use of gas in 2050 ranges from 30% above 2019 levels to 85% below them with a median 45% decline. Woodside considers that a stable energy transition will be one in which energy is affordable and reliable, as well as lower carbon. The GWA facility will continue to provide an incremental volume of hydrocarbons to Australian and international markets during its estimated remaining field life (between 2036-2040). Woodside considers that this ongoing operation is aligned with goals for supporting the energy transition and is compatible with the Paris Agreement goal to limit global warming to below 2°C. Woodside considers our role in providing energy as core to our contribution to a just energy transition. UNSD Goal 7 is to "ensure access to affordable, reliable,	

[58] *Export from Wood Mackenzie LNG Carbon Emissions Tool available from: https://www.woodside.com/docs/default-source/our-business---documents-and-files/pluto---documents-and-files/wood-mackenzie-lng-carbon-e*

[59] *Paris Agreement: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf.*

[60] *FCCC/PA/CMA/2023L.17 (Draft decision distributed 13 December 2023) First global stocktake text extracts https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf (Section I, Clause 3).*

[61] *FCCC/PA/CMA/2023L.17 (Draft decision distributed 13 December 2023) First global stocktake text extracts https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf (Section II, Subsection A, Clause 28 (d)).*

[62] *FCCC/PA/CMA/2023L.17 (Draft decision distributed 13 December 2023) First global stocktake text extracts https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf (Section II, Subsection A, Clause 29).*

[63] *Other upstream indirect emissions such as those associated with helicopter travel and suppliers are not considered material.*

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Demonstration of acceptability

sustainable and modern energy for all". The GWA facility will provide an incremental volume of hydrocarbons to Australian and international markets during its estimated remaining field life. Woodside considers that this development is aligned with the goals for supporting the energy transition and is compatible with the Paris Agreement goal.

Woodside is a signatory to several global initiatives which are complementary to our corporate approach to methane emissions management, which include OGMP (2024), Oil and Gas Climate Initiative Aiming for Zero Methane Emissions (OGCI Near-Zero) and the Methane Guiding Principles (MGP, 2022), which are voluntary, international multi-stakeholder partnerships between industry and non-industry organisations. Woodside will pursue compliance with these commitments in line with the control measures (**C.8.5**) (refer to Internal Context above, and key control measure).

Stakeholder expectations and feedback

All feedback, claims or objections from relevant persons has been appropriately responded to and addressed (see Appendix F), and controls proposed have been assessed in the EP.

Other Requirements

Legislation and other requirements considered relevant for this aspect, and a demonstration of how these requirements are met, are described below.

Requirement	Demonstration
Marine Order 97 Gives effect to Annex VI of MARPOL 73/78	The requirements of Marine Order 97 are incorporated into the key control measures.
National Greenhouse and Energy Reporting (NGER) scheme Annual GHG reporting for facilities	The requirements of NGER reporting scheme are incorporated into the key control measures.
National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	The requirements of NGER Safeguard Mechanism are incorporated into the key control measures.
National Pollutant Inventory (NPI) Reporting Annual air pollutant reporting	The requirements of annual NPI reporting are incorporated into the key control measures.
Conservation Management Plan for the Blue Whale 2015–2025 Management action A3.1: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica Conservation Advice *Balaenoptera borealis* Sei Whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica Conservation Advice *Balaenoptera physalus* Fin Whale	As described above, the predicted atmospheric and GHG emissions from the GWA facility are considered de minimis, with no link to climate change impacts on Australian or International receptors. Therefore, the GWA facility is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale 2015–2025 (CoA, 2015a), Conservation Advice for Sei Whale (TSSC 2015a), Conservation Advice for Fin Whale (TSSC, 2015b), National Recovery Plan for the Southern Right Whale (DCCEEW, 2024b) or the Recovery Plan for Marine Turtles in Australia (CoA, 2017).

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Demonstration of acceptability		
Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica National Recovery Plan for the Southern Right Whale Action area A3.1: Continue to meet Australia's international commitments to address causes of climate change, including greenhouse gas emissions Recovery Plan for Marine Turtles in Australia Management action A2.1: Continue to meet Australia's international commitments to address the causes of climate change		
Conservation Advice Rhincodon typus Whale Shark No specific strategies or actions identified Recovery Plan for the White Shark (Carcharodon carcharias) No specific strategies or actions identified Wildlife Conservation Plan for Seabirds No specific strategies or actions identified Wildlife Conservation Plan for Migratory Shorebirds No specific strategies or actions identified Marine bioregional plan for the North-west Marine Region No specific strategies or actions identified North-west Marine Parks Network Management Plan No specific zone rules identified	N/A.	

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO 8a GWA facility GHG emissions shall assist in NWS Project Facility achieving GHG reductions under reformed Safeguard Mechanism (inclusive of legislated net zero emissions by 2050). **EPO 8b** Air quality from direct atmospheric emissions will be limited to planned impacts and activities described as part of the Petroleum Activity. **EPO 8c** Minimise GHG emissions from support vessels through efficient fuel usage and consideration of fuel types utilised[64].	**C 8.1** Contract vessels complying with Marine Order 97 (Marine Pollution Prevention – Air Pollution).	**PS 8.1** Support vessels contracted whose practices comply with Marine Orders as applicable to vessel size, type and Class.	**MC 8.1.1** Marine verification records.
	C 8.2 NGERS and NPI reporting – estimation of GHG, energy and criteria pollutants	**PS 8.2** GWA activity emissions reported annually in accordance with NGERS and NPI.	**MC 8.2.1** NGERs and NPI reporting records.
	C 8.3 Apply for and manage net direct and indirect NWS GHG emissions to within the relevant baseline and requirements under the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*	**PS 8.3** Manage net direct and indirect NWS GHG emissions to within the accepted baseline, and requirements under the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*	**MC 8.3** Records demonstrate implementation
	C 8.4 Forecast, measure, monitor and or estimate facility fuel and flare emissions (in accordance with NGERS/NPI and WMS procedures named in Section 7.2.7.6) to inform optimisation management practices and minimise environmental impact of emissions.	**PS 8.4.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P31 - Environmental Emissions Monitoring and Controls to; ○ provide means of detection of environmental releases, emissions and discharges to prevent MEEs from manifesting over time, and/or as required to assure compliance monitoring and reporting equipment. ○ describes monitoring gas flared and fuel gas consumed.	**MC 1.11.1** Refer to Section 6.7.1

[64] *Other upstream indirect emissions such as those associated with helicopter travel and suppliers are not considered material.*

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
		○ describes function and maintenance requirement of flare re-ignition panel. E.g. Maintaining functionality of flare and fuel flow metering equipment and estimation techniques to meet applicable criterion for reporting under NGER Determination and NPI.	
		PS 8.4.2 Fuel and flare targets tracked, as required by WMS procedures named in Section 7.2.7.6.2.	**MC 8.4.2** Records demonstrate performance against annual fuel and flare targets.
		PS 8.4.3 Implement Production Optimisation and Opportunity Management Procedure for the GWA facility as a component of NWS operations	**MC 8.4.3** Records demonstrate annual process is applied.
		PS 8.4.4 Direct annual emissions from the operation of GWA facility (fuel, flaring and fugitives) are limited to the $MtCO_{2\text{-}e}$ p.a. as listed in Table 6-19.	**MC 8.4.4** Records demonstrate direct annual emissions do not exceed the total as listed in Table 6-19.
	C 8.5 Implement relevant methane management measures at GWA	**PS 8.5.1** Implement relevant methane management measures including: • Routine annual methane survey at GWA commencing with methane inventory survey in 2025 (completed) to identify and evaluate methane sources in accordance with Woodside's POOMP and OGMP framework. • Evaluate fugitive emissions identified and put in place actions to remediate sources where practicable.	**MC 8.5.1** Records demonstrate relevant methane management measures are identified, assessed and implemented.

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
		• Safety-driven LDAR - start-up leak checks. • Operational gas detection fixed and mobile, to identify methane sources. • Maintenance of CCTV and FFG function to minimise cold venting via flare.	
	C 8.6 Maintaining flare to maximise efficiency of combustion and minimise venting, incomplete combustion waste products and smoke emissions	Refer to **PS 8.4.1**	Refer to **MC 8.4.1**
	C 8.7 Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels	**PS 8.7** Evaluation of tenders for support vessels considers emissions parameters	**MC 8.7.1** Records demonstrate that emissions were considered in tender evaluations
	C 8.8 Implementation of LLPO compression and associated power generation upgrades to maintain gas export under declining reservoir pressure conditions, including optimisation of compression and power generation configuration.	**PS 8.8** LLPO compression and power generation systems are operated within the assessed operating configuration described in this EP.	**MC 8.8.1** Records demonstrate monitoring and review of LLPO operational performance and associated fuel gas demand.
EPO 9 Woodside will support customers to reduce their GHG emissions.	**C 9.1** Woodside supports customers[65] to reduce their emissions via the investment in new energy products and lower carbon services, including the progression of corporate Scope 3 targets that apply across Woodside's portfolio including the following:	**PS 9.1** Woodside will progress its Scope 3 investment and emissions targets, aligned with stated timeframes.	**MC 9.1.1** Progress against targets reported in the relevant annual Woodside disclosures to relevant industry standards and/or requirements. This includes an estimate of abated emissions from currently sanctioned projects.

[65] The customers for these products and services may be the same as the customers of our oil and gas business, directly substituting their energy for new products or directly abating the associated emissions. They may also be customers of the new products and services, without also being customers of oil and gas.

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
	Scope 3 Investment Target[66]: • Woodside has a Scope 3 investment target aiming to invest $5 billion in new energy products and lower carbon services (non LNG) by 2030[67]. Scope 3 Emissions Abatement Target[68]: • Woodside has a Scope 3 emissions abatement target, to indicate the potential abatement impact of these products and services upon customer Scope 1 or 2 emissions. This target is to take final investment decisions on new energy products and lower carbon services by 2030, with total abatement capacity of 5 $MtCO_2$-e per year[69].		
	C 9.2 Woodside will work with the natural gas value chain to reduce emissions in third party systems (e.g. regasification and distribution).	**PS 9.2** Woodside to implement the following: • sharing knowledge via Australian industry forums and other companies in the natural gas value chain through; ○ the adoption and promotion of global methane frameworks such as the Methane Guiding Principles and Oil and Gas	**MC 9.2.1** Records demonstrate that listed actions have been undertaken and are effective.

[66] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment. Timing refers to financial investment decision, not start-up/operations.

[67] Includes pre-RFSU spend on new energy products and lower carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside's net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans.

[68] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third-party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment.

[69] Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance.

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
		Decarbonisation Charter. ○ advocacy for stable policy frameworks that reduce carbon emissions. ○ Annual review of the implementation and outcomes of these measures, this includes consideration of current or new industry forums, initiatives and natural gas value chain participants.	

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6.7.8 Routine atmospheric emissions: indirect emissions associated with gas processing onshore

Context		
Location – Section 3.2 Facility layout and description – Section 3.5 Operational details – Section 3.6	Cultural values and heritage – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of impact	*Environmental value(s) potentially impacted*						*Evaluation*						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Consideration of potential indirect impact from atmospheric emissions associated with onshore processing of GWA gas			✓			✓	B	Air Quality – No lasting effect. Heritage – No attributable impact assigned.	-	-	LCS GP PJ	Acceptable, if ALARP	EPO 10 EPO 11a EPO 11b

Description of source of impact

Atmospheric emissions (non-greenhouse gas emissions) are gases and particulates from an activity, or piece of machinery, which have a recognised adverse effect on human health and/or flora and fauna. The main emissions responsible for these effects include carbon monoxide (CO), oxides of nitrogen (NOx), sulphur dioxide (SO_2), particulate matter less than 10 microns (PM10), non-methane volatile organic compounds (VOCs), BTEX (benzene, toluene, ethylbenzene and xylenes), which are specific VOCs of interest. This section covers indirect atmospheric emissions only (direct atmospheric emissions are covered in Section 6.7.7).

The processing of gas from GWA at the KGP onshore processing facilities will result in the release of atmospheric emissions. These emissions, and their potential indirect effects, have not been raised by stakeholders as a concern, but given the nature and scale of the activity, they are evaluated within this EP.

This section covers indirect atmospheric emissions and provides contextual evaluation of consideration for potential indirect impacts. Consideration of potential indirect impacts include those causing a reduction in ambient air quality impacting human health as well as the potential to contribute to accelerated weathering of rock art on the Burrup Peninsula and within the Dampier Archipelago (i.e. Murujuga). These potential indirect impacts, if realised, would not arise solely from processing of GWA gas, as they would be a result of cumulative airshed conditions generated from multiple sources.

Murujuga Rock Art Strategy

The WA State Government (DWER) has established a Murujuga Rock Art Strategy (MRAS) in partnership with MAC as the Traditional Custodians of Murujuga.

DWER has primary responsibility for the day-to-day implementation of the strategy in partnership with MAC. This includes working with MAC to oversee the development and implementation of a world's best practice monitoring and analysis program that will determine whether the rock art on Murujuga is subject to accelerated change (for further information see Murujuga Rock Art | Western Australian Government (www.wa.gov.au).

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The results from studies underway will guide management and protection of Murujuga rock art, with State environmental protection and heritage legislation in place as the applicable regulatory framework.

The MRAS states that:

"The data currently available from previous monitoring projects does not allow for a conclusive answer on whether anthropogenic emissions are impacting Murujuga's rock art. The Murujuga Rock Art Strategy is therefore essential to fill these gaps in knowledge.

Although it is not known whether the rock art is being impacted currently, there are feasible impact pathways by which emissions from industrial activities and other local sources could cause accelerated weathering of the rock art. The strategy is examining these potential pathways and the condition of the rock art to understand whether change is occurring, and whether there is a need to set a future limit on emissions to ensure accelerated weathering does not occur."

"Initial levels of safe air quality have been set for the rock art. In the final years of research, the scientists will refine and determine final safe air quality criteria. These will be monitored to ensure the long-term protection of the rock art."

As a causal link between current industrial air emission levels and anthropogenic-induced change to rock art on Murujuga has not been established, nor sources defined, it is not yet practicable to attribute impact and risk level posed by the Petroleum Activity. The scientific uncertainty that persists is addressed by an adaptive and precautionary management framework in place by way of the MRAS and the associated Murujuga Rock Art Monitoring Program (MRAMP), together with the State Environmental Protection Act 1986 (WA) and associated regulatory framework, approvals and licences.

Onshore processing emission context

Gas from GWA is exported via the IFL from the GWA platform, which join the second trunkline (2TL) near NRC and is processed at the Woodside-operated KGP. Products from GWA are processed into LNG, domestic gas, condensate and LPGs and then sold and delivered to customers via ship or distributed to customers via pipeline for domestic consumption for purposes such as heating, electricity generation or industrial processes such as the production of LNG, ammonia, urea or hydrogen. While the operation of these onshore processing facilities at KGP is outside the scope of this EP, the atmospheric emissions associated with processing GWA gas at these facilities is addressed in this section. It is, further, noted that gas from other facilities, namely NRC, Angel and Okha is also processed at KGP. Potential impacts from atmospheric emissions arising from onshore processing of gas from these facilities is not part of the scope of this EP.

Source of atmospheric emissions from onshore processing

The principal atmospheric emissions from onshore processing in terms of potential for air quality impacts arise from the combustion of gas in fuel turbine generators and compressors as well as acid gas removal vents at onshore facilities. Gas processing and liquefaction can also result in flaring of some gas and incidental venting of un-combusted hydrocarbon gas. The most significant by-products of gas combustion, flaring and venting of gas from GWA will include oxides of nitrogen (NOx), carbon monoxide (CO), methane and non-methane volatile organic compounds (VOCs) including BTEX (benzene, toluene, ethylbenzene and xylenes). Ozone is not typically emitted directly from gas consumption or processing but is formed through anthropogenic sources via chemical reactions between oxides of nitrogen and other emissions such as VOCs and CO in the presence of ultraviolet light. Ventilation readily disperses emissions relative to criteria. There may also be traces of particulate matter (PM), hydrogen sulphide (H_2S) and sulphur dioxide (SO_2) but such emissions are historically minor from the onshore processing of GWA gas, owing to low sulphur in the gas and combustion of natural gas as fuel. Emissions of PM from the consumption of gas from GWA are negligible in comparison to background and other industrial sources.

Sources of emissions within the Murujuga Airshed

Potential indirect impacts from processing of gas from GWA could arise via a contribution to the cumulative effect of all emissions in the airshed. The Murujuga airshed encompasses the entire Burrup Peninsula and includes the population centres of Dampier and Karratha and surrounding areas. Industrial facilities that currently release or have approval to emit into the Murujuga airshed include[70]:

- Woodside Operated North West Shelf Venture's Karratha Gas Plant (KGP)
- Woodside Operated Pluto LNG Facility
- Yara Pilbara Fertilisers Pty Ltd Ammonia Plant
- Yara Pilbara Nitrates Pty Ltd Technical Ammonium Nitrate Production Facility (TANPF)
- Perdaman Urea Project
- Pilbara Iron Yurralyi Maya Power Station
- Santos Devil Creek Power Station

[70] https://www.epa.wa.gov.au/sites/default/files/EPA_Report/EPA%20Report%201727%20-%20North%20West%20Shelf%20Extension%20Project%20-%20assessment%20report.pdf

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- ATCO Karratha Power Station
- EDL West Kimberley Power Plant (Maitland LNG Plant).

Atmospheric emissions into the Murujuga Airshed from onshore processing of gas from GWA

Atmospheric emissions associated with onshore processing of gas from GWA are emitted and combined with similar emissions from natural sources and other industrial activities in proximity of the Murujuga region. Assessment of potential impacts considers cumulative impacts within the airshed rather than estimating emissions influence associated with processing gas from GWA in isolation. Further, estimating ground level concentrations of atmospheric constituents as related to human health and deposition relies on complex non-linear photochemical modelling, underpinned by biochemical and physical forcing systems such as regional meteorological forcing model.

Therefore, the impact assessment is based on a cumulative airshed modelling inclusive of contribution from onshore processing of GWA gas, and other material sources.

In 2021, DWER commissioned Ramboll Australia Pty Ltd to undertake a Study of the Cumulative Impacts of Air Emissions in the Murujuga Airshed[71] (Ramboll 2022) which considered a "complete emission inventory" including air emissions from existing and proposed future industries, shipping, and aggregated sources in the Pilbara region. The study used the CAMx atmospheric emission model, which includes atmospheric photochemistry to evaluate concentrations of a range of pollutants including NOx, ozone, SOx, CO, VOCs, and particulates across two modelling domains. The detailed 1.33 km grid encompasses the Dampier Archipelago, as far East as Wickham and as far West as 40 Mile Beach. Predicted ground level concentrations were evaluated at Karratha, Dampier, Hearson Cove and Ngajarli (Deep Gorge) and compared with relevant criteria in the National Environment Protection Measure (NEPM) air quality standards. Deposition rates were also predicted.

Emission estimates in the Ramboll (2022) study were based on a range of sources, including publicly available datasets, engineering design estimates (maximum and averages) and facility level monitoring data which match the selected year's meteorological data. The scenarios investigated as part of this study included:

- A baseline scenario reflecting 2014 sources, including all industrial, mobile, domestic and commercial as well as natural sources. This covers onshore gas processing at steady state operational capacity at Pluto Train 1 and KGP Gas Plants. The year 2014 was selected due to typical meteorology (Ramboll 2022). A comparison of modelled data with real-world air quality monitoring data was undertaken, which "indicated reasonable agreement with the measurements at Burrup Road, Dampier, and Karratha"
- A future scenario that considered the above scenario as a basis but included proposed future additional industrial emissions sources in 2030. This scenario included operation of Pluto Train 1, Pluto Train 2, KGP and Perdaman onshore facilities and other future projects producing at capacity.

Assumptions regarding non-industrial emissions considered in these scenarios were based on a range of sources (Ramboll 2022):

Mobile sources:

- Commercial shipping and boating, with data sourced from the maritime automatic identification system (AIS) which also identifies vessel type, enabling application of USEPA default specifications for engines.
- Recreational boating
- Vehicles, which included data from an ABS survey of motor vehicle use scaled down the region, vehicle registration information and traffic and road network data from Main Roads WA
- Aircraft, which applied techniques from NPI to data supplied by airports and public sources such as aircraft operator website and tracking tools.
- Railways, based on public data on fuel consumption per tonne of minerals delivered and mine site production rates. All rail lines in the region are operated by mining companies.

Domestic and commercial sources:

- Estimates of population (with growth for future scenario)
- Other sources such as solvent and aerosol use (per capita data), bitumen road construction (materials usage), service stations (applying population data to service station locations), domestic fuel burning (from previous surveys) and others
- Natural sources such as vegetation, dust, bushfires and oceanic sources which came from other models.

Both the baseline and 2030 scenarios included operation of onshore processing facilities at capacity which covers the portion associated with ongoing processing of GWA gas.

Specific assumptions for individual emission sources were provided by all regional parties in confidence to DWER or were otherwise estimated by Ramboll based on sources such as NPI for operating facilities, and as such are not

[71] Study of the Cumulative Impacts of Air Emissions in the Murujuga Airshed: https://www.wa.gov.au/system/files/2023-03/Study-of-the-cumulative-impacts-of-air-emissions-in-the-Murujuga-airshed.pdf

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published in the report. Woodside provided inputs to the Ramboll (2022) study in response to DWER's data request, and these are aligned with scenario descriptions and assumptions described in North West Shelf Project Extension Environmental Review Document (ERD) Appendix E Air Quality Impact Assessment[72] (Jacobs 2019), Section 4, Scenarios 3 and 4 with existing, approved and referred facilities operating – which included (amongst others):

- Airshed baseline
- NWS Extension Project with NOx improvement opportunities
- Expansion of Pluto (Train 2 fed by Scarborough gas)
- Perdaman Urea project
- Methanol facility proposal.

Ramboll used tools such as the EPA's Proposal Search Tool and related assessment documentation (such as Environment Document Review or Works Approvals) to provide data on future proposed developments. The model performance was validated at a number of locations using real-world air quality monitoring data provided by DWER and industrial operators in the region.

This indicated that NOx loads to the airshed from NO_2 concentrations predicted by the model were "similar ranges at Karratha, but the model is biased high at Burrup Road and Dampier" which indicates that modelled outcomes at these locations on Murujuga are conservative. It also indicates that assumptions for model inputs are appropriate.

The Jacobs (2019) assumptions were developed with "reasonable and conservative emission estimates" for the purposes of completing a robust risk and impact assessment of industrial sources are, such as inclusive of elevated flare rates (Jacobs 2019). This 2030 projection is the "Future Burrup Strategic Industrial Area state (existing, approved and referred) with proposed emission reductions in place" referred to in Table 6-5 of the NWS Project Extension ERD. The Jacobs (2019) report drew on an earlier aggregated air emissions inventory for the Pilbara region developed by SKM (2003) for sources such as biogenic emissions, vegetation sources and other natural sources, and other previous modelling studies. The Jacobs (2019) model outputs were compared with real-world air quality monitoring results from multiple locations, which indicated that the model was "performing well in terms of being able to accurately predict a variety of statistical results for NO_2. as measured by Woodside at the Burrup, Dampier and Karratha monitoring stations." In addition to validating model performance, this also demonstrates that the assumptions used for existing emissions sources were appropriate.

Ramboll (2022) estimated that NOx loads to the Murujuga airshed (1.33 km grid encompassing Dampier Archipelago, Murujuga, Karratha and Roebourne) from industrial sources were estimated to be 13,937 tonnes per year and were forecast to reduce to 12,052 tonnes per year by 2030. A significant contribution to this cumulative airshed reduction is associated with commitments by the NWSJV to reduce NOx emissions from the Karratha Gas Plant by 40% by 2030. Ramboll (2022) did not predict NOx air concentrations in excess of current air quality standards in any modelled scenario.

The assumptions for Murujuga airshed NOx emissions underpinning Ramboll (2022) are suitably conservative for reviewing relative contribution of KGP for the onshore processing of GWA gas using information provided by the respective facilities as described Table 6-22.

Table 6-22: Baseline, current and future modelled NOx emissions from KGP

Scenario	KGP	
	NOx emission rate annual avg (g/s)	Source/comment
Baseline scenario (2014)	281.1	Jacobs 2019
Current	248.7 (12% below modelled baseline)	Reported NPI data, 2022/23 period (with consistent multi-year history)
Future emissions scenario assumptions (2014)	149.2 g/s (40% reduction commitment)	NWS Extension ERD commitment (Table 6-9, p 106)

The current trajectory of aggregated emissions in the Murujuga airshed indicated that the future emissions scenario assumptions considered by Ramboll (2022) were conservative because:

- Assumptions for Pluto Train 1 and 2 include conservatisms as set out in the Jacobs (2019) report. Assumptions for Train 2 equipment are based on vendor specified performance, which is a conservative basis for emission estimation. This performance will be measured and validated in accordance with Condition 38 of the Pluto Train 2

[72] NWS Extension Environment Review Document Appendices: https://www.woodside.com/docs/default-source/current-consultation-activities/australian-activties/north-west-shelf-project-extension---appendices.pdf

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Works Approval[73], which will include a summary of the environmental performance of equipment against design specifications and the Pluto AQMP (which is consistent with Jacobs 2019). Validation is also covered in section 5 of the Pluto AQMP.

- KGP has commenced the NOx reduction committed in the NWS Extension ERD (see Table 6-9 on pg 106) which has been further strengthened as a condition of Ministerial Statement 1233[74] (MS 1233) to a 60% reduction by 2030. In 2024, LNG Train 2 was taken offline (Woodside 2024).

Emissions estimates for the Perdaman urea project in Jacobs (2019) are 8.93 g/s. It is acknowledged, that the current Perdaman Urea Project Air Quality Management Plan (2021) references an Air Quality Impact Assessment (Jacobs 2020) which estimated 'based on engineering and other data' total NOx emissions for the plant of 11.7 g/s. This increase is 0.7% of the Ramboll future scenario and therefore negligible in context of the broader airshed. It is Woodside's understanding that the proposed methanol plant is no longer proceeding, which for context was expected to contribute 28.05 g/s (Jacobs 2019).

Woodside is not aware of any reason why the future emissions scenario assumptions for contribution to the Murujuga airshed from other sources are not appropriate. Any potential future development not considered in this scenario would be required to undergo its own assessment process under regulatory frameworks (described below). Further, the MRAS/MRAMP is expected to identify any ongoing or future trends in air quality which could potentially impact rock art.

Ramboll (2022) found that "SO_2, NO_2, PM2.5, PM10, CO and NH_3 peak ground level concentrations are centred at industrial facilities near or on the Burrup Peninsula, showing that industrial sources and shipping contribute to emissions in the area, but with total air concentrations for these compounds remaining below current air quality standards except for PM2.5 and PM10." The report also noted that the governing driver for particulate matter concentrations was dust, rather than industrial emissions. As stated in the report "There are no accepted or commonly applied standards for assessing deposition of acidic air pollutants on land surfaces or on sensitive receptors such as the Burrup Peninsula rock art. While this assessment report provides results for acidic deposition, no assessment, or commentary is provided about the potential impacts on areas of sensitivity such as the rock art."

Some recommendations provided in the Ramboll (2022) report related to potential improvements in accuracy regarding terrain datasets, modelling approach for dust and treatment of plumes in the model grid, and uncertainty related to emissions estimates including NPI data. However, "significant effort was made to obtain the most accurate information available with particular focus on sources located near or on the Burrup peninsula" and the comparison of modelled emissions with latest data shown in Table 6-18 indicates that conservatism exists in assumptions. The NWS Project Extension ERD Air Quality Impact Assessment compared measured ground level concentrations of NO_2 from 2009-2015 with NEPM criteria and found no exceedances. The report states that there was "no currently accepted or commonly applied standards for assessing deposition of air pollutants on land surfaces, such as Burrup Peninsula rock art" and the report does not provide any assessment or commentary on potential impacts to rock art.

In FY25, total NO_X emissions reported for KGP under NPI was 4,383 t GWA gas amounted to approximately 43% of North West Shelf offshore feed gas routed to KGP. NO_X emissions associated with processing of GWA gas is therefore estimated to be approximately 1,885 tpa. Total NO_X emissions from KGP are required to reduce to 3,065 tpa by 2030 under MS 1233. Assuming the current relative contribution to KGP, annual NO_X emissions associated with GWA gas will as such also reduce to approximately 1,317 tpa by 2030.

Based on the estimated total regional airshed emissions used in Ramboll (2022) and NO_X contribution to the airshed outlined above, it is estimated that NO_X emissions associated with the processing of GWA gas via the KGP currently accounts for approximately 14%. Assuming similar gas supply, the contribution from GWA gas is anticipated to decline to ~9% of the total estimated 2030 NO_X load in the Murujuga region.

Continued processing of gas from GWA is therefore not anticipated to cause an increase of NOx within the Murujuga airshed beyond historic maximum levels. The reduction in future NOx load within the Murujuga airshed presented in the Ramboll (2022) study is reflective of commitments made by third party proponents that are publicly disclosed either in Ministerial Statements or Air Quality Management Plans.

Existing regulatory framework

Facilities associated with the onshore processing of LNG are not subject to the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth). Assessment and management of these emissions is required pursuant to various State and Commonwealth legislative frameworks. Impacts associated with atmospheric emissions are subject to an appropriate level of independent assessment by regulatory agencies and management measures are in place which are sufficient to ensure the environment performance outcome of this Petroleum Activity can be achieved.

[73] https://www.der.wa.gov.au/our-work/licences-and-works-approvals/lwa-available-for-public-appeal/item/download/12092_8dfe908804d6cc7505eb20a79d09f08f

[74] https://www.epa.wa.gov.au/sites/default/files/1MINSTAT/1727%20Statement%201233%20for%20publishing%20North%20West%20Shelf_0.pdf

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A summary of the relevant legislation, approvals and governance measures in place to manage atmospheric emissions from onshore processing facilities such as Pluto LNG facility, NWS Karratha Gas Plant and Perdaman Urea facility are outlined below.

Environmental Protection (EP) Act 1986 (WA)

The EP Act is the principal legislation in WA that provides for "the prevention, control and abatement of pollution and environmental harm" and for "the conservation, preservation, protection, enhancement and management of the environment".

The object of the EP Act is to protect the environment of Western Australia, having regard to a number of principles, including:

- the precautionary principle, which holds that where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, decisions are to be guided by:
  - careful evaluation to avoid, where practicable, serious or irreversible damage to the environment
  - an assessment of the risk-weighted consequences of various options
- the principle of intergenerational equity, which holds that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- the principle of waste minimisation, which holds that all reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment
- principles relating to improved valuation, pricing and incentive mechanisms, which include the 'polluter pays principle' whereby those who generate pollution and waste should bear the costs of containment, avoidance or abatement.

Assessment of Proposals under Pt IV of the EP Act

In Western Australia, it is the role of the independent Environment Protection Authority (EPA) to assess proposals against the requirements of the EP Act and EPA objectives.

Section 15 of the EP Act establishes the objectives of the EPA (Authority): It is the objective of the Authority to use its best endeavours to protect the environment; and to prevent, control and abate pollution and environmental harm. The object and principles guide the overall application of the powers of the EP Act. The principles are matters to which the EPA is required to have regard as a condition of the valid exercise of its powers to assess and report on proposals and schemes under the EP Act. The EPA only recommends that the Minister approve a proposal if it can be demonstrated the proposal is aligned with the EP Act including any relevant objectives. Under the EPA's Air Quality Environmental Factor Guideline, the EPA has an objective to maintain air quality and minimise emissions so that environmental values are protected[75] (Air Quality Objective).

The Air Quality Environmental Factor Guideline identifies that this objective recognises the fundamental link between good air quality and the environmental values it supports. It also recognises the principle of waste minimisation as set out in the EP Act. In the context of this factor and objective, the EPA recognises that maintaining good air quality and minimising emissions protects human health and amenity, as well as the broader environment. When considering the significance of potential impacts to air quality, the EPA may have regard to the various matters outlined in Section 5 of the Statement of Environmental Principles, Factors and Objectives[76], including the Air Quality Objective. Applicable assessments by the EPA and subsequent decisions by the Minister for Environment under Part IV of the EP Act relevant to KGP includes Ministerial Statement (MS) 757 for the Pluto LNG Facility, and MS 536 for LNG trains 4 and 5 at the Karratha Gas Plant (KGP). MS 1233 (superseding MS 536) was also recently issued for the North West Shelf (NWS) Project Extension, published in December 2024, which allows for continued operation of the NWS Project and processing of third party gas at KGP. Further information regarding conditions of implementation is detailed in sections below.

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The EPBC Act is the Australian Government's key piece of environmental legislation providing for the protection of the environment and the conservation of biodiversity. The EPBC Act requires approval for activities with a significant impact on a number of matters of national environmental significance, including, for example, National Heritage places and listed threatened species or endangered communities. The NWS Project Extension (a proposal to extend operation of the NWS Project beyond 2030) has been assessed under the EPBC Act by the WA EPA under an accredited process (Refer EPA Report 1727). The controlling provision for the proposed action is 'National heritage places', and the Project is subject to assessment by accredited assessment under Part IV of the EP Act at the level of Public Environment Review. The State environmental approval for the NWS Project Extension has now been finalized through MS 1233, issued on 12 December 2024.

[75] EFG – Air Quality - 03.04.2020.pdf (epa.wa.gov.au).

[76] Statement of environmental principles, factors, objectives and aims of EIA (epa.wa.gov.au).

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Aboriginal heritage

Aboriginal sites are of cultural heritage importance to both the Aboriginal and wider community. The Aboriginal Heritage Act 1972 (AH Act) is the principal legislation providing for the preservation of Aboriginal sites and objects in WA. All Aboriginal heritage sites or places to which s.5 of the AH Act applies are protected, whether they are registered with the Department of Planning, Lands and Heritage (DPLH). It is an offence under the AH Act to excavate, destroy, damage, conceal or in any way alter any Aboriginal site unless the consent of the Registrar or the Minister for Aboriginal Affairs is first obtained.

Approvals under Pt V of the EP Act

DWER regulates certain premises through a works approval and licensing process to prevent, control, abate and mitigate pollution and environmental harm, under Part V of the EP Act. Woodside currently holds the following licences for facilities operated on the Burrup Peninsula: Pluto Liquefied Natural Gas (LNG) Project (L8752/2013/2)[77], Woodside Onshore Gas Treatment Plant (KGP) (L5491/1984/18)[78]. The above-mentioned licences specify air emission limits for individual emission points, NOx concentration in Pluto turbine exhausts is limited to 100 mg/m^3 over a stack test average period not less than 30 minutes; and at KGP 350 mg/m3 for trains 1, 2 and 3 and 100 mg/m^3 for trains 4 and 5. Monitoring of emissions points is required at KGP annually and quarterly, respectively. Woodside is required under these licences to submit an Annual Audit Compliance Report identifying compliance with the conditions of the licences ensuring emissions remain within acceptable levels. Copies of the Annual Audit Compliance Reports are available on the DWER's website.

Other regulatory measures in place for management of atmospheric emissions

National Environmental Protection (Ambient Air Quality) Measure (Cth)

The National Environment Protection Council (NEPC), comprising Commonwealth, State, and Territory Ministers, finalised the NEPM (Ambient Air Quality), on 26 June 1998. The National Environment Protection Council Act 1994 (Cth) allows the National Environment Protection Council to make National Environment Protection Measures (NEPMs). NEPMs are a special set of national objectives designed to assist in protecting or managing particular aspects of the environment. The NEPM [Ambient Air Quality] outlines ambient air quality monitoring protocol that allows for the adequate protection of human health and well-being.

National Environment Protection (National Pollutant Inventory) Measure 1998 (Cth)

The National Pollutant Inventory (NPI) is a public database that provides information on 93 selected air pollutants and their emissions, produced as a result of industry, transport, commercial premise, and household activities, and emitted to air, land, and water in Australia. The NPI is a Commonwealth Government initiative, and each state and territory is responsible for implementing the program. The objective of the NPI is to inform the community about emissions to water, air, and land and acceptable emissions levels. It also provides information for policy and decision making, environmental planning and management, and minimising waste.

The Woodside operated facilities on the Burrup Peninsula have been reporting emission data to the NPI from the NWS Project since the 1998/1999 reporting period and Pluto since the commencement of operations in 2012. Other facilities located on the Burrup Peninsula including Yara Pilbara Fertilisers Pty Ltd have reported since 2005. Emissions data is publicly available on the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) website: https://www.dcceew.gov.au/environment/protection/npi

Other Relevant Frameworks and Programs

Murujuga Cultural Landscape Strategic Management Framework

As outlined in Appendix C, the Murujuga Cultural Landscape Strategic Management Framework establishes the management structure for the recently inscribed Murujuga Cultural Landscape World Heritage Property. In its support for the MRAMP, Woodside supports the implementation of this framework and its objectives to protect and conserve OUV associated with Murujuga Cultural Landscape.

Murujuga National Park Management Plan

As outlined in Appendix C, Murujuga National Park management plan objectives are achieved through measures which include Conservation Agreements, funding and support, and Cultural Heritage Management Plans. It is under the Conservation Agreement that Woodside continues to support research into, and monitoring of the National Heritage values of the park and conducts its activities in a manner not inconsistent with the Murujuga National Park Management Plan.

Program: Murujuga Rock Art (Western Australian Government)

The Western Australian Government publish on their Aboriginal heritage conservation website a summary of their Murujuga Rock Art Program, the partnership with Murujuga Aboriginal Corporation, and the Murujuga Rock Art Strategy. A summary of the program is outlined in Appendix C, further information relevant to this assessment is

[77] https://www.der.wa.gov.au/component/k2/item/download/4517_d69d5c4f5e6e32e9687a81cd206801d1.

[78] https://www.der.wa.gov.au/component/k2/item/download/6862_f7458bf91f1480d35d8f604ed3b129e0.

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maintained current on the Government of Western Australia online website: https://www.wa.gov.au/government/publications/murujuga-rock-art-strategy

Murujuga Rock Art Management Program

In recognising the high level of stakeholder concern and scientific uncertainty regarding the links between anthropogenic emissions and risks to rock art, the Department of Water and Environmental Regulation (DWER) produced the Murujuga Rock Art Strategy[79] (MRAS) in 2019 (DWER 2019), which builds on the research to date. According to DWER, the MRAS will establish a world's best practice program to monitor, evaluate and report on factors that could affect the condition of Murujuga rock art. This is being undertaken in consultation with the Murujuga Aboriginal Corporation, a team of national and international experts in relevant disciplines and is funded by industry, including Woodside. The MRAS describes a risk-based approach for the management of impacts to the rock art that is consistent with the State Government's responsibilities under the EP Act. A program being executed as part of the MRAS is the Murujuga Rock Art Monitoring Program (MRAMP) which will monitor, evaluate, and report on changes and trends in the integrity of the rock art, specifically to determine whether anthropogenic emissions are accelerating the natural weathering, alteration, or degradation of the rock art. This will enable timely and appropriate management responses by the Western Australian Government, industry and other stakeholders to emerging issues and risks.

In recent EPA assessment reports for industrial facilities on the Burrup Peninsula, the EPA has recommended a condition mandating relevant facilities to comply with air quality standards such as those derived from the MRAMP. In the EPA's North West Shelf Project Extension Assessment Report 1727 (EPA Report 1727), the EPA recommends the 'Air Quality Outcome' for recommended condition 3 be 'to ensure that no air emissions from the proposal have an adverse impact accelerating the weathering of rock art within Murujuga beyond natural rates.' Recommended condition 3-3 states that if the Minister notifies the proponent in writing of one or more air quality standards to be met (including standards derived from the results of the Murujuga Rock Art Monitoring Program) and the proponent complies with all those standards, and any amendments to the standards the proponent is taken to have achieved the Air Quality Outcome.

EPA Report 1727[80] specifies that the proponent is to achieve compliance with any detailed air quality standards to ensure that there are no adverse impacts accelerating the weathering of rock art within Murujuga beyond natural rates. The EPA expects that this will include environmental quality objectives and environmental quality standards derived from the results of the MRAMP. MS 1233 was subsequently issued for the North West Shelf Project Extension, published in December 2024, adopting the above-mentioned EPA-recommended conditions relating to air quality. The Ministerial Statement for the Perdaman Urea Project (MS 1180) includes the same air quality outcome condition that is proposed in EPA Report 1727 and MS 1233.

Statements and commitments made by Woodside within the North West Shelf Air Quality Management Plan commit to manage potential impacts to Aboriginal rock art on the Burrup Peninsula in accordance with the MRAS and as a member of the Murujuga Rock Art Stakeholder Reference Group. Woodside actively supports the implementation of the Murujuga Rock Art Strategy through membership of the Murujuga Rock Art Reference Group and provides funding associated with the Murujuga Rock Art Monitoring Program. Woodside also supports the coordinated approach for an atmospheric deposition monitoring program to be established under the Strategy and currently provides data to the program from the Woodside Atmospheric and Ambient Air Quality Monitoring Programs.

MRAMP interim environmental quality criteria

The MRAMP published interim Environmental Quality Criteria (EQC) which set the initial levels of airborne substances which are considered to not cause harm to rock art (see Curtin University 2025). Woodside complies with the State government's requirements to ensure activities do not result in the region's emissions exceeding MRAMP EQC Standards. Interim Standards published by MRAMP indicated that activities in the region currently remain below this value. Interim EQC Guidelines exist to guide an ongoing management approach under the MRAMP framework for the region.

Onshore facility air emission design mitigations

Under the regulatory Conditions and Part IV Air Quality Management Plans of KGP, Woodside is required to implement a number of controls and risk management practices related to air emissions, including the demonstration of best practice design, and monitoring and abatement programs. The NWS Extension Environment Review Document[81] details how the most recent LNG trains (Trains 4 and 5) constructed at the existing North West Shelf Project are already equipped with lower NOx technology for gas turbines. KGP's Ministerial Statement 536[82] (February 2000), applicable for the construction and operation of Train 4 and Train 5, included the requirement to install low-NOx burners on new gas equipment. MS 1233 issued for the North West Shelf Project Extension, published in December 2024,

[79] *https://www.wa.gov.au/system/files/2020-07/DWER-Murujuga-rock-art-strategy.pdf.*

[80] North West Shelf Project Extension Proposal (epa.wa.gov.au).

[81] https://www.epa.wa.gov.au/sites/default/files/PER_documentation2/NWS%20Project%20Extension%20-%20Environmental%20Review%20Document.pdf.

[82] https://www.epa.wa.gov.au/sites/default/files/1MINSTAT/Ministerial%20Statement%20536.pdf

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requires that no air emissions from the proposal have an adverse impact accelerating the weathering of rock art within Murujuga beyond natural rates. MS 1233 contains a number of conditions related to air quality and NOx emissions, including but not limited to:

- Within 12 months of issue of MS 1233, the Air Quality Management Plan must be revised in consultation with Murujuga Key Stakeholders
- Compliance with all air quality objectives and standards, including, if applicable, those derived from the results of the MRAMP
- At a minimum, reduce NOx emissions to 3,065 tpa by 31 December 2030, corresponding to a 60% reduction
- Include provisions for adoption of continuous or predictive emission monitoring technologies on each stack of LNG processing trains by 30 June 2030
- Identification of best practice design and operational measures and efficient technologies implemented or to be implemented:
    - Specifying when each measure will be implemented
    - Methodology for determination of effectiveness of the measure in minimising air emissions
    - Independent Peer Review Report assessing these measures against international and Australian industry best practice.

Monitoring data and compliance reporting is required to be provided to the WA EPA and made public.

The NWS Extension Environment Review Document[83] details how the most recent LNG trains (Trains 4 and 5) constructed at the existing North West Shelf Project are already equipped with lower NOx technology for gas turbines. KGP's Ministerial Statement 536[84] (February 2000) applicable for the construction and operation of Train 4 and Train 5 included the requirement to install low-NOx burners on new gas equipment.

The existing NWS Air Quality Management Plan includes the following management actions:

- MA4: Adopt practicable and efficient technologies to reduce air emissions. The AQMP states that Woodside has identified and evaluated credible opportunities to achieve a long-term reduction in air emissions and commits to a 40% [updated to 60% in MS 1233 Condition] reduction in NOx emissions from a baseline set between 2013 and 2018. Measures which the NWS has or is considering include implementation of technology such as water injection, dry-low NOx, ultra dry-low NOx, selective catalytic reduction (SCR) systems on turbines, or ceasing operation of older non-DLN equipment with proportionally higher NOx emissions.
- MA5: Implement an adaptive management plan addressing the potential impact to rock art from industrial emissions. This is described in the AQMP, stating that since it is difficult to set appropriate management actions given the current lack of scientific understanding of the impacts of air emissions on petroglyphs, actions will be monitored, reviewed, evaluated and updated considering a range of factors including outcomes from MRAS.

Should credible scientific evidence emerge that industrial emissions are causing accelerated weathering of Murujuga rock art, the impact profile of onshore atmospheric emissions may change. In this eventuality, sufficient provisions exist in the relevant onshore regulatory frameworks as described above to ensure that onshore atmospheric emissions are limited to acceptable levels, which may require review of controls currently in place at onshore processing facilities to manage potential impacts (for example under Section 3 of MS 1233 for NWS). In such a case whereby impact is attributed to the onshore processing of GWA gas, EP change management processes would apply (Section 7.2.5) as required by Regulation 39. It is not feasible to pre-emptively lay out a planned response to such an outcome because there is a broad range of potential findings, severity of change, mechanism timeframes, attribution considerations, and outcomes from stakeholder engagement. However, potential options are available to reduce NOx emissions in this context and to achieve the 60% reduction in NOx emissions at NWS required under MS1233, which may include:

- Retrofitting NOx reduction technology such as DLN (or other technologies as noted above under description of NWS AQMP MA4) on, or ceasing operation of older non-DLN equipment at KGP which emits proportionally higher NOx concentration
- Implementation of further NOx reduction measures or technologies which may no longer be considered disproportionate in context of a proven impact pathway, such as water injection, dry-low NOx, ultra dry-low NOx.

The NWS Karratha Gas Plant is subject to cultural heritage management obligations detailed in MS1233 – further described in Section 6.11.

[83] https://www.epa.wa.gov.au/sites/default/files/PER_documentation2/NWS%20Project%20Extension%20-%20Environmental%20Review%20Document.pdf.

[84] https://www.epa.wa.gov.au/sites/default/files/1MINSTAT/Ministerial%20Statement%20536.pdf

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Impact assessment
Indirect emissions from gas processing onshore – assessment of potential impacts

Contribution to accelerated weathering of Murujuga Rock Art

The Dampier Archipelago, including the Burrup Peninsula and surrounds, traditionally referred to as Murujuga (which means 'Hip Bone Sticking Out' in the Ngarluma-Yaburara language) is located in the Pilbara region of WA. With more than one million images, Murujuga is home to one of the largest, densest and most diverse collections of rock art in the world.[85]

The presence of industry on the Burrup Peninsula has generated concerns from some stakeholders that these emissions may lead to an accelerated weathering of rocks on which rock art is present which may reduce the visibility or destroy the rock art. Research to date on the impacts of emissions on rock art has not been conclusive. Recent publication has included interim environmental quality standards (EQC) set the initial levels of airborne substances which are considered to not cause harm to rock art.

As outlined in Appendix C, industrial emissions on the Burrup Peninsula are subject to extensive scientific studies to understand any potential pathway to impact on rock art, including wet and dry deposition which may alter the pH of rocks as well as the supply of nutrients which may promote microbial activity, the metabolic by-products of which may interact with rock surfaces.

The history of research on this subject, may be broadly divided into four periods. The earliest period, from 2002 to 2009, aligns with the studies conducted by the Burrup Rock Art Monitoring Management Committee (BRAMMC) but also includes work conducted by others, primarily Bednarik who identified potential impact pathways through acid formation and microbial impacts. During this period, MacLeod (2005) also took some comparative pH samples between in-situ rocks and museum samples. None of this parallel work established that industrial emissions were impacting rock art, or the levels of emissions at which impacts may be expected to occur. This period concluded with the 2009 BRAMMC report which stated that "there is no scientific evidence to indicate that there is any measurable impact of emissions on the rate of deterioration of the Aboriginal rock art in the Burrup" (BRAMMC 2009). The report also recommended the establishment of the Burrup Rock Art Technical Working Group (BRATWG) to conduct ongoing monitoring.

The second period of research aligns with BRATWG monitoring from 2010 to 2017. A significant component of this monitoring involved the monitoring of rock art colour. In 2016, Black and Diffey produced an unpublished paper critiquing the statistical methods applied by the CSIRO, which led to a review by Data Analysis Australia (DAA) which raised "substantial doubts about the reliability of the data". A final report from the CSIRO adapted its statistical methods to respond where possible to the conclusions from DAA describing the results as "not fully conclusive". During this period, the BRATWG also commissioned an extreme condition weathering study which found that the dissolution of chemicals began at lower pH levels than previously estimated, however, this work was only preliminary and should not be relied upon in setting thresholds for potential impacts.

The third research period from 2017 until 2023, although overlapping with the conclusion of the BRATWG and initial years of the MRAS and MRAMP, is marked by the absence of any results from a coordinated, well-resourced research program and instead comprises a number of independent studies. As a result, it is difficult to characterise these studies consistently. Some (Black et al. 2017a; Dorn 2020; Smith 2022a) critiqued or re-stated conclusions of previous studies. Black et al. 2017b repurposes historic pH data and concludes that "theoretical evaluation using electrochemical equilibrium principles" indicates impacts to rock art will result from a decreased pH since pre-industrial times; CGB Solutions' 2020 analysis of historic pH and contemporary measurements found that pH was not decreasing and that any correlation between acidity and LNG production sites could not be statistically supported. Both studies suffer from significant issues with the available data.

Other studies (Black et al. 2018; Gleeson et al. 2018) discuss possible impact pathways but do not draw conclusions on whether impacts to rock art are resulting from industrial emissions. Smith et al. (2022b) hypothesise that industrial emissions may be responsible for some reported impacts but acknowledges that the methodologies applied are subject to considerable errors that prevent a definitive conclusion being drawn. A series of studies by MacLeod (2020, 2021, MacLeod and Fish 2021) report on the results of monitoring conducted for Yara Pilbara Nitrates. The outcomes of these reports are inconsistent. Solo reports by MacLeod (2020, 2021) both state that "There is unequivocal evidence that the changes in colour contrast are affected by the changes in the mean and in the minimum pH observed on the rock art sites at the reference positions", though the results include increased acidity correlating in some places with increased contrast and elsewhere with decreased contrast. MacLeod and Fish (2021) then state that "there is presently no adverse impact on the rock engravings from industrial pollution owing to a lower NOx level than when the studies commenced 14 years ago". This conclusion is critiqued by Smith et al. (2022a).

As noted in the MRAMP conceptual model, "while many of these studies form useful datasets to include in subsequent analyses, in general these studies have been inconclusive or failed to show any significant impact of anthropogenic impact on the rock art or chemical/biological species composition and abundance (Commonwealth of Australia 2018).

[85] https://www.wa.gov.au/system/files/2020-07/DWER-Murujuga-rock-art-strategy.pdf.

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Nor have they produced any definitive relationships to inform a conceptual impact model, which is instead reliant on fundamental scientific studies in other regions to inform the likely processes occurring at Murujuga (e.g. Dorn 2020).[86]"

In December 2023, the first interim report of MRAMP[87] was published (refer to Section 12.2.1.3 of Appendix C), marking the start of a fourth period of research. The report states that results remain inconclusive with regards to whether industrial air emissions are resulting in anthropogenic change to rock art and recommends that further scientific studies are required. The MRAMP report noted that while some spatial trends in electrochemical parameters (such as pH) and rock surface elemental composition have been found, more work is required to determine causal relationships for these trends (as relationships were not as expected). Spatial trends were also identified as appearing for several measured air pollutants such as NO_2 that are generally consistent with earlier air quality modelling by Ramboll (Ramboll 2022).

The MRAMP monitoring report outlined that similar trends exist for the pH measurements taken in March–April 2022 and the measured NO2 levels generally. This relationship was the reverse of what would be expected to confirm the acid deposition hypothesis in previous literature as MRAMP found pH values in March–April 2022 were highest where NO2 concentrations are highest; whereas with acid deposition, pH is expected to be lower where NO2 is higher, as NO2 is often a precursor to the formation of nitric acid, which has a low pH. Neutral pH is around 7, with low pH indicating potentially acidic conditions. The results in the MRAMP monitoring report have been reinterpreted by Smith (2024) in addition to original research but fails to address this unexpected correlation. Smith (2024) claims that "the damaging impact of acidic emissions on the rock surfaces is not in doubt" but does not provide adequate detail on the original research to allow its reliability to be considered, nor does it provide reason to question the conclusions of the MRAMP report, which stress that the available data is insufficient to draft any meaningful conclusions.

In May 2025, DWER released the secondary technical report of the MRAMP (Curtin University 2024). The results of this report build on the progress reported in the interim (2023) technical report. Over two years of monitoring and research, the program has gathered extensive environmental and geochemical data. The findings in the report included spatial variations in rock porosity, microbiome composition, and pollutant distribution, with elevated porosity linked to historic industrial emissions. Anthropogenic emissions are hypothesized to have accelerated in the 1970s, particularly due to emissions from the former Dampier Power Station. Preliminary conclusions suggest that while the rock surface environment is generally alkaline, pollutants like NO_2 and SO_2 may still play roles in altering surface chemistry and microbiome activity. While the action of NO_2 and SO_2 may contribute to these processes, the historic "acidification" or "acid rain" hypothesis from the literature (Bednarik 2007; Smith et al.,2022a) does not appear to be supported (Curtin University 2024). The study also acknowledged significant trends in air quality data such as 'higher-than-expected' levels of ammonia, ozone, and black carbon, which may pose risks to the rock art and microbiome. These trends are to be investigated as part of the ongoing research to determine the source of potential impacts to rock art.

Throughout this ongoing period of research, new information will continue to be considered and responded to. However, the resourcing, scope and expertise available to MRAMP make it by far the most significant source of research on the cultural impacts of industrial emissions on Murujuga. MRAMP is also co-managed by MAC and emphasises Indigenous decision making and management, aligned with international guidance and standards, including the United Nations Declaration on the Rights of Indigenous Peoples and ICOMOS Charter for the Protection and Management of the Archaeological Heritage. For these reasons, the results of the MRAMP are prioritised in understanding the potential for emission to impact Murujuga's rock art.

The contribution of emissions from processing of GWA gas to the Murujuga airshed is relatively small over the remaining life of GWA offshore operations. Further, there is inconclusive evidence for any causal link between current industrial air emission levels and anthropogenic change to rock art on Murujuga. Given this, and that downstream facilities are subject to separate regulatory assessment outcomes, the risk of processing of GWA gas at KGP adversely impacting rock art on Murujuga is considered to be low, and no impact classification is able to be assigned. Woodside will continue to monitor the outcomes of MRAMP (as per **C 10.1**) and update or change manage the EP accordingly (Section 7.2.8).

Potential Impacts to Human Health

It is recognised that gaseous emissions causing a reduction in ambient air quality have the potential to impact human health as regulated by the NEPM. and the NWS Project Air Quality Management Plan has modelled and assessed the potential impacts of industrial emissions on human health in accordance with the requirements of Western Australian regulatory requirements and international standards (e.g. World Health Organisation). Ambient air quality monitoring programs are in place which demonstrate that current air pollution levels were well below standards set to protect human health and well-being.[88] The magnitude of emissions from processing GWA gas are insufficient to lead to the exceedance of any relevant health criteria on the Burrup Peninsula or surrounding region.

The NWS Project have committed to maintaining an ongoing air quality monitoring program that is in place to monitor the ambient ground-level concentrations of relevant gases on the Burrup Peninsula, with comparisons being made against the NEPM standards and reported to DWER.

Ambient air quality monitoring results from the NWS Project will be summarised in its Annual Environment Report, including any observed exceedances of ambient air quality standards.

As part of the NWS Extension proposal, the EPA assessed the residual impact to human health and amenity from the proposal's nitrogen dioxide (NO2), SO2, NH3, ozone (O3), and particulate (as PM10 and PM2.5) emissions at sensitive

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receptors both in isolation and in a cumulative context with other existing and future emission sources. Predicted ground level concentrations (GLCs) at Dampier, Karratha, Hearson Cove, and Deep Gorge (Ngajarli) remain below applicable current and future proposed air quality criteria at 'standard operating conditions' and 'worst case' cumulative impact scenarios, with the exception of annual PM10 and PM2.5 GLCs at Hearson Cove and Deep Gorge (Ngajarli), which slightly exceed the applicable criteria due to high levels of natural background dust. Subject to recommended conditions, the impact of the proposal was considered as being consistent with the EPA's objective for air quality in respect of human health.

Noting the absence of any current impacts to human health from industrial activity on Murujuga and presence of a comprehensive regulatory regime including monitoring program, no lasting effect from processing of GWA gas to human health is expected based on slight effect to overall cumulative air quality in context of defined air quality criteria.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)89***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
MRAS and associated MRAMP in place by DWER and MAC to protect the Aboriginal rock art by providing a long-term framework that builds on previous work to deliver an improved approach to monitoring, analysis and management. The MRAS describes an approach for the management of impacts to the rock art that is consistent with the Western Australian Government responsibilities under the Environmental Protection Act 1986 (WA). Woodside will maintain membership of the Murujuga Rock Art Reference Group Woodside funding contributes to the execution of the MRAS and MRAMP Woodside monitors the outcomes of the MRAMP and assesses relevance to this activity as part of the	F: Yes. CS: Aligned with existing practice	Benefit as defined in sections detailed above: Program: Murujuga Rock Art (Western Australian Government) Murujuga Rock Art Monitoring Program. Further studies governed by DWER/MAC are required to provide greater scientific certainty and allay stakeholder concerns	Control based on State Government Process, the outcomes of which are currently, or expected to be, implemented via current Regulatory regimes.	Yes. **C 10.1**

[86] https://www.wa.gov.au/system/files/2023-12/murujuga-rock-art-monitoring-program-conceptual-models.pdf.

[87] https://www.wa.gov.au/system/files/2023-12/murujuga-rock-art-monitoring-program-monitoring-studies-repo2023.pdf.

[88] Pluto Air Quality Management Plan, Rev 2

[89] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)89***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
implementation strategy of this EP.				
NWS Karratha Gas Plant is subject to assessment and compliance under the *Environmental Protection Act 1986* (WA), including: • existence of applicable Ministerial Statement(s) • interim EQC developed as an outcome of MRAS • NO_x concentration limits at emission point sources (via. EP Act Part V Licencing) • implementation of Part IV conditions. • requirement to assess and implement NO_x reduction measures, (e.g. NWS AQMP MA4) This includes implementation of potential Environment Quality Management Framework (EQMF) developed as an outcome of MRAS; and measures such as NO_x concentration limits at emissions point sources under EP Act Part V licences, and implementation of Part IV conditions. The NWS AQMP also requires MA5 development of an adaptive management plan to address the potential impact to rock art from industrial emissions.	F: Yes. CS: Aligned with existing practice.	Implementation of activities and associated controls to ALARP and acceptable levels supports the maintenance of cultural features and heritage values. NWS AQMP MA4 commits to adoption of practicable and efficient technologies to reduce air emissions. MS 1233 requires a reduction of NOx emissions from KGP of 60% by 2030, and identification and implementation of best practice (with peer review). Train 2 has been retired in support of this commitment. Further information on these requirements is described above, under Onshore Facility Air Emission Design Mitigations	Control based on legislative requirements – must be adopted.	Yes. **C 10.2**
Implement the Petroleum Activity in a manner that is not inconsistent with the objectives of the	F: Yes CS: Significant potential cost. Legal requirement.	Legal requirement to carry out activities not inconsistent with the Murujuga National	Control based on legislative requirements – must be adopted.	Yes **C 11.2**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)89***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Murujuga National Park Management Plan 78, through execution of the Conservation Agreement and Deep Gorge Joint Statement.		Park Management Plan.		
Implement the Petroleum Activity in a manner that is not inconsistent with UNESCO Operational Guidelines for the Implementation of the World Heritage Convention	F: Yes. CS: Minimal cost.	Implementation of controls for compliance with World Heritage Listing ensures protection and conservation of outstanding universal values,	Benefits outweigh cost/ sacrifice.	Yes. **C 11.3**
Good practice				
Apply a 'living heritage'[90] management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	F: Yes CS: Minimal cost	Implementation of the 'living heritage' approach pays acknowledgement and respect to Traditional Custodian communities. It supports the transfer of cultural knowledges and is an effective strategy to manage intangible cultural values.	Benefits outweigh cost/sacrifice.	Yes. **C 11.1**
Forecast, measure, monitor and or estimate facility fuel and flare emissions (in accordance with NGERS and WMS procedures named in Section 7.2.7.6.2) to inform optimisation management practices and minimise environmental impact of emissions.	F: Yes. CS: Minimal cost. Standard practice.	Minimises environmental impact of emissions through planning, ongoing review, governance and optimisation. It combines with good operating practice to maximise production and reduce flaring emissions and fuel emissions at KGP to manage cost, which improves energy intensity (e.g. cleaner production), optimising	Control is WMS requirement – must be adopted.	Yes. **C 10.3**

[90] Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation and evolves in response to the environment. Woodside applies a 'living heritage' approach to its cultural heritage management. This includes ensuring that Traditional Custodians are given voice to identify interests, transmit information and express concerns. Woodside works with Traditional Custodians to support and follow appropriate cultural protocols, including calling to Country, conducting smoking ceremonies (in areas where this custom is appropriate) and undertaking cultural awareness. Woodside will collaborate and provide relevant information it holds to groups such as Heritage Management Committees where they are established.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)89***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
		emissions from the activity. Fuel and flared gas are potential product streams, as such, Woodside applies routine short- and long-term optimisation and opportunity management framework to identify and prioritise enhancement opportunities. Annual flare and fuel target setting and monthly review of performance is completed for KGP.		
Professional judgement – Eliminate				
No additional controls identified				
Professional judgement – Substitute				
No additional controls identified				
Professional judgement – Engineered Solution				
Process all GWA gas exclusively through KGP LNG trains 4 and 5 (T4/T5), equipped with Dry Low NOx (DLN) technology.	F: Not feasible due to operational design and process constraints requiring gas distribution across all active trains; preferential routing to T4/T5 is not possible. CS: Minimal cost as existing infrastructure supports current distribution.	Exclusive processing via DLN trains would maximize NOx reduction from processing of GWA gas, but operational design and processing constraints prevent this. Balanced gas distribution avoids operational failures that could increase emissions and ensures turbines operate within design parameters, maintaining overall emission control.	Not proportionate – Operational design and processing constraints prevent exclusive use of T4/T5 for processing GWA gas. Balanced gas distribution across all available trains is required to sustaining emissions reductions and system reliability.	No
Selective Catalytic Reduction (SCR) at onshore processing facilities.	F: Potentially; subject to sufficient space and technical integration and safety requirements. Installation of SCR on gas turbines to reduce NOx emissions is proven in the power industry. Woodside is not aware of any instances where this	SCR technology converts NOx to other compounds using a catalyst and gaseous reagent, usually ammonia or urea. If feasible, the installation of SCR on existing turbines could deliver a material reduction in NOx	Not proportional based on current impact profile. SCR was not selected for Pluto Train 1 nor recent Train 2, however, the design was subject to peer review and EPA assessment with regard to best practice emission controls.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)89***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	has been retrofitted to mechanical drive turbines such as those used in LNG trains. CS: Substantial cost and significant business disruption. The installation of SCR systems introduces material new hazards to facilities, including the need to import significant amounts of ammonia daily, and potentially introduces risks associated with ammonia emissions while operating (which are also being monitored for potential impact to rock art). New gas fired boilers would be required to replace lost ability to extract heat from best-practice exhaust waste-heat recovery systems.	emissions from onshore processing.	Retrofitting on operational processing facilities carries significant cost, safety considerations and complexity. This technology may continue to be assessed under relevant air quality reduction conditions for NWS. However, does not form part of the base case to achieve reduction commitments.	
Risk-based analysis				
Application of Woodside's Risk Management Procedures provide for assessment and ongoing management of impacts from indirect emissions from gas processing. This includes: • ongoing hazard identification, risk assessment and identification of control measures • established programs and frameworks such as MRAS/MRAMP.				
Company values				
Woodside's corporate values require personnel to comply with applicable policies, standards, procedures and processes, and to be accountable for their actions in line with the Woodside Compass. As outlined above, the Petroleum Activity will be undertaken in accordance with these requirements, including the implementation of controls to manage indirect emissions from gas processing.				
Societal values				
Consultation was undertaken for this program to identify the views and concerns of relevant stakeholders. Industrial air emissions on the Burrup Peninsula are being managed by the EPA as part of the EP Act Part IV assessment process and DWER as part of their EP Act Part V process and via the MRAS. Relevant persons consulted in the course of preparing this EP did not raise concerns in relation to atmospheric emissions associated with onshore processing of GWA gas and potential for impact of those emissions on rock art.				
ALARP statement: On the basis of the environmental risk assessment outcomes application of tools appropriate to the decision type B (i.e. Decision Type B; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the adopted controls appropriate to manage the potential impacts of indirect emissions from gas processing onshore on cultural values and heritage. Air emissions from onshore processing at the NWS Project have been assessed and approved in accordance with Ministerial Statement 536 (and others). Air emissions from onshore processing at the NWS Project Extension (i.e. an extension of the life of the NWS Venture beyond 2030) have been assessed by the EPA under Assessment Report				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)89***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
1727, and approved by MS 1233. Both facilities are subject to the provisions of Commonwealth and State legislation to ensure unacceptable environmental impacts are avoided. The assessment in the ALARP table reflects the current status of controls related to routine indirect atmospheric emissions, in the context that there is currently no scientific consensus that these emissions are accelerating weathering of Murujuga rock art. These current controls are considered to appropriately implement a risk-weighted precautionary principle. As described above, established programs and frameworks such as MRAS/MRAMP are designed to investigate theorised impact pathways and determine whether impact is occurring. Should credible scientific evidence emerge that anthropogenic emissions associated with processing of GWA gas is causing accelerated weathering of Murujuga rock art as an outcome of MRAMP, the impact profile of onshore atmospheric emissions may change. In this eventuality, sufficient provisions exist in the relevant onshore regulatory frameworks to ensure that onshore atmospheric emissions are limited to acceptable levels, which may require review of controls currently in place at onshore processing facilities to manage potential impacts. As no reasonably practicable additional or alternative controls have been identified that would further reduce the impacts without disproportionate sacrifice, the impacts are considered ALARP.				

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Demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The impact assessment has considered the relevant principles of ESD: • Conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • Inter-generational equity, enduring the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • Integration of long-term and short-term economic, environmental, social and equitable considerations in decision-making. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) • Woodside Indigenous Communities Policy ***External Context*** The impact assessment has considered feedback from relevant persons (Section 5). No stakeholder feedback relevant to indirect emissions associated with gas processing onshore was identified during consultation for this EP. Controls and monitoring frameworks to manage indirect emissions associated with gas processing onshore have been designed to be commensurate with the consequence level, location and sensitivity of the receiving environment (including social and amenity values). These measures address broader societal expectations to an acceptable level. ***Other Requirements*** Murujuga Cultural Landscape World Heritage Property As outlined above, The Murujuga Cultural Landscape Strategic Management Framework (Government of Western Australia, 2022) establishes the management structure for the inscribed Murujuga Cultural Landscape World Heritage Property. Existing laws and regulations, joint management agreements, management plans and complementary policies, strategies and programs in place for Murujuga will remain active and support the listing of Murujuga Cultural Landscape as a World Heritage Property. The management plans give effect to the duties and obligations of Australia under the World Heritage Convention and help facilitate the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property. Consequently, by demonstrating that it is not	The impact assessment concludes that indirect atmospheric emissions from the onshore processing of GWA gas contribute only a minor portion to the overall industrial emission airshed load on the Burrup Peninsula. Atmospheric emissions within the Murujuga airshed from the NWS Project Extension have undergone independent assessment by the WA and agencies and have been considered acceptable and are subject to management conditions as detailed in Onshore Design Mitigations and adopted through **C 11.3**. As there is no conclusive evidence of a causal link between current industrial air emission levels and potential anthropogenic change to rock art on Murujuga, and that downstream facilities are subject to separate regulatory assessment outcomes, no impact classification is able to be assigned. The predicted level of impact to air quality is considered to be of an acceptable level (consequence level F- No lasting effect), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant world heritage management principles, AMPs, recovery plans • the predicted level of impact has been reduced to ALARP. To manage impacts from indirect atmospheric emissions to cultural heritage and air quality to an acceptable level the following EPOs have been applied: **EPO 10:** Prevent accelerated weathering of Murujuga rock art or impact to human health from air emissions that result from onshore processing of GWA gas.

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Demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
inconsistent with the management plans outlined below, the Petroleum Activity is not inconsistent with the Australian World Heritage Schedule 5 Principles (See Table 1-5) and therefore aligns with the World Heritage Convention. Alignment of the Petroleum Activity and indirect emissions associated with onshore gas processing with these management plans, their objectives and regulatory frameworks, where relevant to the Petroleum Activity are addressed in Section 6.10 (Table 6-43).	**EPO 11a:** No adverse impacts to cultural features and heritage values from the Petroleum Activity **EPO 11b:** Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural features and heritage values. The adopted controls are considered appropriate to manage the impacts of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met. On the basis of the assessment outcomes and application of tools appropriate to the decision type (i.e. Decision Type B; Section 2.4.4.2), the adopted controls are appropriate to consider the potential impacts and that this is managed to a level that is broadly acceptable. Compliance with those controls demonstrates that the EPO is met.

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO 10 Prevent accelerated weathering of Murujuga rock art or impact to human health from air emissions that result from onshore processing of GWA gas.	**C 10.1** The Murujuga Rock Art Strategy and Monitoring Program (MRAS/MRAMP), run by DWER and MAC, is in place to protect the Aboriginal rock art by providing a long-term framework that builds on previous work to deliver an improved approach to monitoring, analysis and management. Woodside will maintain its support of the MRAS/MRAMP, monitor the outcomes and assesses relevance to this activity as part of the implementation strategy of this EP.	**PS 10.1** GWA Petroleum Activity processes gas through Burrup onshore facilities where a functioning MRAS and MRAMP framework is in place (or subsequent position on risk/impact and applicable program or controls if relevant). Continued support for the MRAS / MRAMP by Woodside and implementation of relevant findings or recommendations as required.	**MC 10.1.1** Annual review of existence of MRAS/MRAMP (or subsequent applicable program or controls) associated results, and applicability for managing the associated risk.
			MC 10.1.2 Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified (Section 7.2.8).
	C 10.2 Karratha Gas Plant is subject to assessment and compliance under the Environmental Protection Act 1986 (WA), including: • existence of applicable Ministerial Statement(s) • implementation of potential EQMF if developed as an outcome of MRAS • NO_x concentration limits at emission point sources (via. EP Act Part V Licencing) • implementation of Part IV conditions. • requirement to assess and implement NO_x reduction measures, (e.g. NWS AQMP MA4) This includes implementation of potential EQMF developed as an outcome of MRAS; and measures such as NO_x concentration limits at emissions point sources under EP Act Part V licences, and implementation of Part IV conditions. The NWS AQMP	**PS 10.2.1** Verify NWS Karratha Gas Plant is subject to assessment under the Environmental Protection Act 1986 (WA).	**MC 10.2.1** Ministerial statement applicable to KGP, and compliance demonstrated via required annual compliance report(s).
		PS 10.2.2 KGP commits to implement adaptive management in the event of an adverse finding from MRAMP applicable to their operations, to appropriately reduce NO_x emissions to acceptable levels. (Existing mechanisms require this, for example under section 3 of MS1233 for NWS).	**MC 10.2.2** Onshore facility approvals documents include change/adaptive management obligations. In response to relevant MRAMP findings, records demonstrate that appropriate measures are taken at KGP which processes GWA gas to reduce NO_x emissions to acceptable levels.

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
	also requires MA5 development of an adaptive management plan to address the potential impact to rock art from industrial emissions.		
	C 10.3 Forecast, measure, monitor and or estimate facility fuel and flare emissions (in accordance with NGERS and WMS procedures named in Section 7.2.7.6.2) to inform optimisation management practices and minimise environmental impact of emissions.	**PS 10.3.1** Flare and emissions targets (includes fuel) tracked, as required by WMS procedures named in Section 7.2.7.6.2.	**MC 10.3.1** Records demonstrate performance against annual KGP flare and fuel targets.
EPO 11a No adverse impacts[91] to cultural features and heritage values from the Petroleum Activity **EPO 11b** Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural features and heritage values.	**C 11.1** Apply a 'living heritage' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	**PS 11.1** Woodside will continue to give voice to Traditional Custodians to identify interests, transmit information and express concern through ongoing consultation as identified in Section 5.7.	**MC 11.1.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified.
	C 11.2 Implement the Petroleum Activity in a manner that is not inconsistent with the objectives of the Murujuga National Park Management Plan 78, through execution of the Conservation Agreement and Deep Gorge Joint Statement.	**PS 11.2.1** Comply with relevant commitments and obligations under the Conservation Agreement and Deep Gorge Joint Statement.	**MC 11.2.1** Records demonstrate compliance with relevant commitments and obligations under, the Conservation Agreement and 'Deep Gorge' Joint Statement.
		PS 11.2.2 Ensure Onshore Processing Facilities comply with relevant facility Cultural Heritage Management Plan(s).	**MC 11.2.2** Onshore processing facilities Annual Compliance Reports demonstrate compliance with facility Cultural Heritage

[91] *For the purposes of the Petroleum Activity, an adverse impact to cultural features or heritage values is considered to occur where there is: direct physical disturbance causing observable damage to a site or object of cultural significance; a measurable and significant decline in the population or habitat of a culturally significant species attributable to the activity; or a substantiated impact on recognised intangible cultural values.*

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
			Management Plan(s).
	C 11.3 Implement the Petroleum Activity in a manner that is not inconsistent with UNESCO Operational Guidelines for the Implementation of the World Heritage Convention	**PS 11.3** Ensure Onshore Processing Facilities operate in accordance with (EPBC) World Heritage Management Principles and relevant objectives of applicable World Heritage Management Plans	**MC 11.3.1** Records demonstrate that activities have not resulted in significant impacts to the OUV of the Murujuga Cultural Landscape.

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6.7.9 Routine light emissions: light emissions from platform, support vessels and flaring

Context		
Platform lighting – Section 3.6.5.1 Operational flaring – Section 3.6.7 Subsea inspection, monitoring, maintenance, and repair activities – Section 3.7 Support vessel operations – Section 3.8	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Cultural values and heritage – Section 4.9	Stakeholder consultation – Section 5

Impact evaluation summary

Source of Impact	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/Impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Light emissions from the GWA platform, support vessels and IMMR activities.					✓		A	F	-	-	GP, PJ	Broadly Acceptable	EPO 12
Light emissions from flaring.					✓								

Description of source of impact

Lighting is used on the GWA platform and support vessels to support 24-hour operations and to provide navigational marking in accordance with Section 3.6.5.1. As lighting is required for the safe operation it cannot reasonably be eliminated.

The distance to the horizon at which lighting from the GWA platform will be directly visible can be estimated using the following relationship:

$$horizon\ distance = 3.57\ x\ \sqrt{height}$$

where 'horizon distance' is the distance to the horizon at sea level (km), and 'height' is the height above sea level of the light source (m).

Based on this relationship, the approximate maximum distances at which key light sources) may be visible at sea level are:

- approximately 18.75 km from the GWA platform production deck (~25 m above sea level).
- approximately 49.60 km from the flare tower (~175 m above sea level).

Operations

External lighting is installed throughout the GWA platform and on support vessels, with lighting primarily directed towards working areas (i.e. platform and vessel decks).

The platform deck is approximately 25 m above sea level, while the flare tower represents the highest point on the facility at approximately 175 m above sea level. External lighting on support vessels is generally lower in elevation than that of the GWA platform and is typically managed to maintain night vision for bridge crew. A relatively small quantity of gas is continuously flared to maintain purge and pilot systems and to dispose of waste streams not recovered to the process. Intermittent flaring may also occur during process upsets to safely relieve excess pressure via the HP flare system. The flare, located at the top of the flare tower, represents the most prominent light source.

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Support vessels, including the ASV, have lighting sources primarily located on accommodation and working decks below the bridge, typically between ~5 and 50 m above sea level. As such, the majority of vessel lighting is at or below the elevation of the primary facility light source (flare tower tip).

IMMR

During IMMR activities, temporary underwater lighting is generated by ROVs and AUVs. Due to the rapid attenuation of light in seawater, these light sources are highly localised and limited to the vicinity of the equipment.

Cumulative light sources

Concurrent activities from platform, support vessels and IMMR activities may temporarily increased localised lighting with the Operational Area.

Light emissions may also arise from nearby offshore facilities, including Okha FPSO, Angel, NRC and Pluto platforms. These sources may contribute to slightly elevated ambient light levels in the region.

Well commissioning

Nitrogen displaced from the Wilcox flowline during GWF4 commissioning of the first Wilcox well is planned to be removed via controlled flaring at the GWA platform for a short-duration period as part of the well clean-up process required to remove nitrogen, fluids and solids from the well and flowline.

The process involves continuous flaring for a minimum of 6 hours and up to 36 hours, or until all nitrogen has been released.

The activity does not introduce a different source of light emissions to that of routine operational flaring, as hydrocarbons will be co-flared with the nitrogen product to maintain stable combustion, resulting in a flare with similar characteristics to normal facility flaring operations as described above.

Impact assessment

Environmental value(s) potentially impacted

Lighting from the GWA platform and support vessels may occur as direct light (light spill) or indirectly as skyglow. The extent and visibility of light emissions are influenced by light source characteristics and environmental conditions.

Subsea lighting associated with IMMR activities (e.g. ROVs and AUVs) is highly localised due to rapid attenuation of light in seawater and is not expected to contribute to surface-visible light emissions or skyglow.

Receptors that have important habitat present within a 20 km buffer of the Operational Area were considered as having potential for interaction, based on recommendations of the National Light Pollution Guidelines for Wildlife (DCCEEW 2023). The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings (15 to 18 km) and fledgling seabirds grounded in response to artificial light 15 km away.

Light emissions can affect fauna in two main ways:

- Behavioural effects: disruption to natural diel cycles or attraction to light sources
- Orientation effects: interference with natural light cues used for navigation or movement

The fauna within the Operational Area are predominantly pelagic fish and zooplankton, with a low abundance of transient species such as seabirds, marine turtles, whale sharks and large whales transiting through the Operational Area and surrounding 20 km light buffer. BIAs and habitats critical for EPBC listed species that overlap the Operational Area are listed in Section 4.6.

Seabirds

Artificial lighting can attract and disorient seabirds, potentially resulting in behavioural disturbance or collision risk (Longcore and Rich 2004; Gaston et al. 2014). However, there are no seabird nesting colonies within the Operational Area, with the nearest at the Montebello Islands (~38 km south of the Operational Area). While a wedge-tailed shearwater breeding BIA overlaps the south-west portion of the Operational Area (approximately 9 km from the GWA platform), individuals are expected to occur at low density and primarily forage during daylight hours.

Support vessel presence is intermittent and of short duration, and lighting is managed where practicable. Accordingly, impacts to seabirds are expected to be limited to localised behavioural disturbance to isolated individuals, with no displacement from important habitat and no lasting effect.

Marine turtles

The Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia 2017) identifies artificial light as a potential threat to marine turtles, particularly for nesting adults and hatchlings, where light cues are used for orientation.

Artificial lighting has the potential to affect marine turtles through disorientation or attraction, particularly during hatchling emergence and nearshore dispersal. Hatchlings have been observed responding to artificial light sources over distances of up to approximately 18 km, and may exhibit altered swimming behaviour where light spill is present (Kamrowski et al. 2014).

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Internesting BIAs for the flatback turtle overlap the Operational Area, with an internesting buffer BIA located approximately 15 km south, within the 20 km light buffer. In addition, internesting habitat critical to the survival of flatback turtles overlaps the Operational Area, and habitat critical to survival for green and hawksbill turtles occurs within the 20 km light buffer (approximately 18.5 km south of the Operational Area). These areas represent environments important for critical life stages, including internesting and reproductive behaviours.

However, the nearest known nesting beaches are located at the Montebello Islands, approximately 38 km south of the Operational Area and approximately 89 km from the GWA platform. As such, there is no credible pathway for impacts to hatchling emergence or sea-finding behaviour, which are the life stages most sensitive to artificial light.

Marine turtles may occur within the Operational Area at low densities during transit or as part of internesting movements. However, available evidence indicates that marine turtles do not rely on light cues for offshore foraging, migration or internesting behaviours, and offshore artificial light sources are not considered a likely mechanism for significant behavioural disruption in these life stages (PENV 2000; 2020).

Isolated individuals may be temporarily attracted to light spill from the platform and support vessels and to a much lesser extent, highly localised subsea lighting associated IMMR activities. Such effects are expected to be short-term and reversible.

Accordingly, impacts to marine turtles are expected to be localised with no lasting effect on populations or important behaviours.

Fish, sharks and rays

Artificial lighting may attract zooplankton and small fish, potentially resulting in localised aggregation of higher trophic species (Meekan et al. 2001). These aggregations are typically restricted to the immediate vicinity of the light source. Subsea lighting associated with IMMR activities may also result in highly localised attraction of zooplankton and small fish, however, these effects are limited to the immediate vicinity of the equipment.

Fish species are known to respond to artificial light in a similar manner to zooplankton, with increased prey availability potentially attracting predatory fish, sharks and rays. Lighting associated with the GWA platform, support vessels or IMMR activities may therefore result in temporary and localised increases in fish abundance in the vicinity of light sources.

A foraging BIA for the whale shark overlaps the Operational Area. Whale sharks primarily feed on planktonic organisms (e.g. krill and larval stages), which may also exhibit localised attraction to light. However, any increase in prey availability associated with artificial lighting is expected to be small in scale and spatially limited. As such, the presence of lighting is not expected to result in any meaningful change in whale shark distribution or aggregation patterns within the BIA.

Given the transient and localised nature of these effects, no change to overall species composition, abundance or ecological function is expected within the Operational Area. Impacts to fish, sharks and rays are therefore expected to be localised with no lasting effect.

Values and Sensitivities

Ancient Coastline at 125 m Depth Contour

The Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF. The Operational Area overlaps approximately 251 km^2 of the 16,242 km^2 KEF (1.5% of the total KEF area). The Operational Area represents a 1,500 m buffer around the GWA subsea infrastructure to facilitate vessel operations.

Given the highly localised extent of light emissions and the absence of benthic or geomorphic sensitivity to light at these depths, potential impacts to the Ancient Coastline at 125 m Depth Contour KEF are expected to be localised with no lasting effect.

Montebello Marine Park

The Operational Area overlaps approximately 3 km^2 of the 3,413 km^2 Montebello Marine Park (0.09% of the total marine park area). The Operational Area represents a 1,500 m buffer around the GWA subsea infrastructure to facilitate vessel operations. While the Operational Area overlaps the Montebello Marine Park, subsea infrastructure does not.

Given the distance to primary light sources and the limited spatial extent of light emissions, impacts to values of the Montebello Marine Park are expected to be localised with no lasting effect.

Cumulative impacts

Cumulative light emissions from nearby facilities (e.g. NRC platforms) may contribute to slightly elevated ambient light levels. However, given the spatial separation of these sources, cumulative impacts are expected to remain localised with no lasting effect.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[92]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
None identified				
Good practice				
Implement a Seabird Management Plan that includes: • standardisation and maintenance of record keeping and reporting of seabird interactions • procedures on seabird intervention, care and management • regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES).	F: Yes. CS: Minimal.	Potential for minor reduction in the likelihood of seabird attraction and interaction with platform and vessel lighting.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**
Lighting will be limited to the minimum required for navigational and safety requirements, except during emergency events.	F. Yes. Lighting is typically appropriate for navigation and safety.	Given the potential impacts to fauna are low and of no lasting effect, implementation of this control would not materially reduce consequence.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost.	Yes **C 12.2**
Well unloading acceptance criteria that define the well objectives will be established.	F: Yes. CS: Standard practice.	Reduces flared volumes and associated light emissions.	Benefits outweigh cost/sacrifice.	Yes **C 12.3**
Professional judgement – Eliminate				
No external lighting during Petroleum Activity.	F: No. Light management is consistent with that required to provide a safe working environment on board the platform and support vessels. CS: Not considered – control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
No flaring during Petroleum Activity.	F: No. Flaring is a safety-critical function required to safely	Not considered, as the control is not feasible.	Not assessed, control not feasible.	No

[92] Qualitative measure

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[92]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
	manage hydrocarbons and relieve excess pressure. CS: Not considered, as the control is not feasible.			
Nitrogen-displacement flaring during Wilcox well clean-up and commissioning limited to daylight hours only.	F: No. Nitrogen displacement requires continuous well clean-up and flaring once commenced. Interrupting the activity to restrict flaring to daylight hours is not operationally practicable and may introduce risks to safety, well performance and completion integrity, while also affecting commissioning efficiency and production delivery. CS: Not considered, as the control is not feasible.	Not considered, as the control is not feasible.	Not considered, as the control is not feasible.	No
Professional judgement – Substitute				
Substitute external lighting with light sources designed to minimise impacts to seabirds, shorebirds and marine turtles: • Use flashing/ intermittent lights instead of fixed beam. • Use motion sensors to turn lights on only when needed. • Use luminaires with spectral content appropriate for the species present. • Avoid high intensity light of any colour.	F: Yes. Technically feasible, however, not practicable for the platform and support vessels. CS: Significant cost/sacrifice. Retrofitting of all external lighting would require substantial modification, procurement and installation effort, with associated operational and considerable cost and logistical constraint.	Potential for minor reduction in light attraction to individual seabirds and marine fauna. Given impacts are already assessed as localised and short-term, with no lasting effect, implementation of this control would not materially reduce consequence.	Grossly disproportionate. The cost/sacrifice required to retrofit lighting systems outweighs the limited environmental benefit.	No
Professional judgement – Engineered Solution				
None identified.				
ALARP statement: On the basis of the environmental impact assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1). Woodside				

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[92]***	***Benefit in impact reduction***	***Proportionality***	***Control adopted***
considers the adopted controls appropriate to manage the impacts of routine light emissions from the GWA platform and support vessels. As no reasonable additional or alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of acceptability
The impact assessment has determined that, given the adopted controls, routine light emissions from external lighting on the GWA platform and support vessels represent a localised impact to marine fauna within the Operational Area, with no lasting effect. BIAs for whale shark foraging, flatback turtle internesting and internesting buffer, and wedge-tailed shearwater breeding areas overlap the Operational Area (Section 4.6.1, 4.6.2, 4.6.4, respectively). While these areas represent habitats important for key life stages, the offshore location of the Petroleum Activity, absence of critical nesting habitat, and localised nature of light emissions limit the potential for interaction with these receptors. Relevant conservation advice and the National Light Pollution Guidelines for Wildlife were considered in the impact assessment, and the Petroleum Activity is consistent with these. On the basis of the assessment outcomes, application of tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), Woodside considers the adopted controls appropriate to manage the impacts to a level that is broadly acceptable. Compliance with these controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
EPO 12 No impacts to marine fauna greater than that caused by minimum required light emissions for safe work and navigation.	**C 12.1** Implement a Seabird Management Plan from GWA, facility support and support vessels.	**PS 12.1** Implementation of the Seabird Management Plan including: • standardisation and maintenance of record keeping and reporting of seabird interactions. • procedures on seabird intervention, care and management • regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES). • a scalable adaptive management process should negative light impacts to nocturnal seabirds be detected.	**MC 12.1.1** Records demonstrate the Seabird Management Plan is implemented.
	C 12.2 Lighting will be limited to the minimum required for navigational and safety	**PS 12.2** Lighting will be limited to that required to support	**MC 12.2.1** Inspection verifies external light is consistent with operational and

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Performance standards***	***Measurement criteria***
	requirements, except during emergency events.	safe work operations and navigation.	navigational requirements, and no unnecessary lighting is used.
	C 12.3 Well unloading acceptance criteria that define the well objectives will be established.	**PS 12.3** Flaring restricted to a duration necessary to achieve the well objectives.	**MC 12.3.1** Records demonstrate flaring was restricted to a duration necessary to achieve the well objectives.

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6.8 Unplanned activities (accidents, incidents, emergency situations) – major environmental events

For Woodside's production facilities, an analysis is undertaken to identify, classify and analyse major environmental events (MEEs), as described in Section 2.5. This extra level of rigour is applied to ensure sufficient controls for operational activities are in place for risks with potential Level B and above consequences as per Woodside's Risk Matrix. MEEs are evaluated against credible worst-case scenarios that may occur when all controls are absent or have failed. The risks considered in this section have therefore been identified as MEEs due to the potential for significant consequence. These sources of risk are subject to additional consideration in accordance with the process described in Section 2.6. Risks associated with the Petroleum Activity that have been classified as MEE's are summarised in Section 6.8.1 and include a range of hydrocarbon spills. The quantitative spill risk assessment methodology used to assess the potential consequence of credible spills is outlined in Section 6.8.2. Credible hydrocarbon spills that have not been classified as MEE's are assessed in Section 6.9. Risks that do not meet the MEE definition, although screened out of the MEE process, are still evaluated for ALARP and risk acceptability using the methodology described in Section 2.6

6.8.1 Major environmental events overview

This section outlines the process for additional analysis and evaluation of MEEs. These are outlined in Table 6-23 and described further in subsequent sections.

Table 6-23: Major environmental events for the Petroleum Activity

No.	Hazard	Top Event
MEE-01	Hydrocarbons in reservoirs, wells, wellheads and xmas trees (XTs)	Well loss of containment
MEE-02	Hydrocarbons in Subsea Equipment (pipelines, manifolds, flowlines and risers)	Subsea pipelines and riser loss of containment
MEE-03	Hydrocarbons in Topsides Equipment	Topsides loss of containment
MEE-04	Hydrocarbons in Subsea and Topsides Equipment and Marine Vessels	Loss of structural integrity
MEE-05	Hydrocarbons in Wells, Subsea and Topsides Equipment and Marine Vessels	Loss of marine vessel separation
MEE-06	Hydrocarbons in Wells, Subsea and Topsides Equipment	Loss of control of suspended load from facility lifting operations

MEEs are described in detail in bowties in Sections 6.8.3 to 6.8.8. These sections also include a summary of the hazard description, hazard management, emergency response, ALARP summary and a list of SCE barriers identified on the bowties. Each group of SCEs is listed under Technical Performance Standards, with consistent naming conventions used across Woodside's process safety management systems (e.g. pipeline integrity SCEs are captured as P09 – Pipeline Systems).

Section 6.8.9 presents the generic bowtie diagrams for SCE failure and human error, illustrating the causes and outcomes, and controls in place to manage potential common cause event (CCE) failure mechanisms. These include SCE equipment failure (CCE-01), and human error (CCE-02). Controls and specific measures are identified for both bowties. Human error is managed via the WMS, and the generic human error bowtie is included in the MEE section for completeness.

ALARP is demonstrated through the identification and selection of controls and barriers based on their independence, with prioritisation in accordance with the hierarchy of controls (where higher-order controls take precedence). Controls are further assessed based on the type of effect they provide. ALARP controls presented for the MEE bowties are classified in accordance with the Type of Effect categories defined in Table 6-24.

Woodside has developed a tailored ALARP position for hydrocarbon spill preparedness and response, including EPOs, EPSs and MCs. These response arrangements act as mitigative controls applicable to all

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MEEs where a hydrocarbon release may credibly occur. The hydrocarbon spill response arrangements are described in Appendix G.

Table 6-24: Barrier Hierarchy and Type of Effect

Type of Effect	Legend	Description
Elimination (Technical)		Elimination controls form the 'first line of defence'. They eliminate the underlying hazard and therefore are the most effective category of control measure. If practicable, they should be selected in preference to any other type, as their existence removes the need for any other controls (e.g. a corrosion-resistant metal could replace the original material of construction).
Elimination (Administration)		
Prevention (Technical)		Prevention controls are intended to remove certain causes of incidents or reduce their likelihood. The corresponding hazard remains, but the frequency of incidents involving the hazard is lowered (e.g. introduction of regular maintenance programs can prevent the development of events involving the hazard). Where hazards and causes could not be 'eliminated', controls are required to prevent them from leading to unwanted events and consequences.
Prevention (Administration)		
Detection (Technical)		Detection controls are those that identify a potentially hazardous scenario (e.g. a change in operating parameters), allowing initiation of procedures or systems to prevent the cause occurring. Controls that detect the occurrence of events are often critical to being able to respond with other control measures that reduce the propagation of the events. Detection controls themselves often provide no actual control other than the awareness of the need to respond.
Detection (Administration)		
Reduction / Control (Technical)		Reduction controls are intended to limit the scale and consequence of incidents. They include systems that detect incidents and take some action (e.g. to reduce the rate of leakage of a toxic gas) and also aspects such as inter-unit separation that prevent escalation of fire and explosion incidents. As there is always potential for controls to fail, additional measures are required to limit the scale and severity of any unwanted event or outcome that may arise, by providing the ability to intervene and limit the propagation of the events.
Reduction / Control (Administration)		
Mitigation (Technical)		Mitigation controls take effect in response to an incident. They include controls that lessen the significance or damage caused by an unwanted event. Such controls only take effect after the hazardous event and outcomes occur. Mitigation controls are generally those designed to protect personnel against the consequences of a hazard or to aid in recovering from the effects of the hazard.
Mitigation (Administration)		

6.8.2 Quantitative spill risk assessment methodology

As part of the risk identification process, Woodside identified the range of credible hydrocarbon spill scenarios that may occur during the Petroleum Activity. Scenarios that have been classified as MEEs are assessed in Sections 6.8.3 to 6.8.8. Scenarios that are not classified as MEEs (as explained in Section 6.8.1) are assessed in Section 6.9.

Location-specific, quantitative hydrocarbon spill modelling was undertaken by RPS, on behalf of Woodside, using a three-dimensional (3D) hydrocarbon spill trajectory and weathering model, Spill Impact Mapping and Analysis Program (SIMAP), which is designed to simulate the transport, spreading and weathering of specific

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hydrocarbon types under the influence of changing meteorological and oceanographic forces. The model does this by releasing particles representing hydrocarbons from a specified point within the model and subsequently transported.

A stochastic modelling scheme was followed in this study, whereby SIMAP was applied to repeatedly simulate the defined credible spill scenarios using different samples of current and wind data. These data samples were selected randomly from an historic time-series of wind and current data representative of the study area. Results of the replicate simulations were then statistically analysed and mapped to define contours of percentage probability of contact at identified thresholds around the hydrocarbon release point.

The model simulates surface releases and uses the unique physical and chemical properties of a hydrocarbon type to calculate rates of evaporation and viscosity change, including the tendency to form oil-in-water emulsions. Moreover, the unique transport and dispersion of surface slicks and in-water components (entrained and dissolved) are modelled separately. Thus, the model can be used to understand the wider potential consequences of a spill, including direct contact of hydrocarbons due to surface slicks (floating hydrocarbon) and exposure of organisms to entrained and dissolved aromatic hydrocarbons in the water column.

During each simulation, the SIMAP model records the location (by latitude, longitude and depth) of each particle (representing a given mass of hydrocarbons) on or in the water column, at regular time steps. For any particles that contact a shoreline, the model records the accumulation of hydrocarbon mass that arrives on each section of shoreline over time, less any mass that is lost to evaporation and/or subsequent removal by current and wind forces.

The collective records from all simulations are then analysed by dividing the study region into a 3D grid. For surface hydrocarbons (floating oil), the sum of the mass in all hydrocarbon particles located within a grid cell, divided by the area of the cell, provides hydrocarbon concentration estimates in that grid cell at each model output time interval. For entrained and dissolved aromatic hydrocarbon particles, concentrations are calculated at each time step by summing the mass of particles within a grid cell and dividing by the volume of the grid cell. The process is also subject to the application of spreading filters that represent the expected mass distribution of each distinct particle. The concentrations of hydrocarbons calculated for each grid cell, at each time step, are then analysed to determine whether concentration estimates exceed defined threshold concentrations.

Hydrocarbon spill modelling assessments undertaken by RPS undergo initial sensitivity modelling to determine appropriate time to add to the simulation after the cessation of the spill. The amount of time following the spill is based on the time required for the modelled concentrations to practically drop below threshold concentrations anywhere in the model domain in the test cases. This assessment is done by post-processing the sensitivity test results and analysing time-series of median and maximum concentrations in the water and on the surface.

6.8.2.1 Worst-case scenarios

In assessing the potential impacts of an unplanned hydrocarbon release, representative worst-case scenarios (in terms of volume and location) have been considered. A summary of the credible hydrocarbon spill scenarios that may occur during the Petroleum Activity is provided in Table 6-25.

Table 6-25:Credible hydrocarbon spill scenarios

Scenario	Hydrocarbon type	Duration (days)	Maximum credible volume	Modelling locations
Scenario 1 Well blowout: hydrocarbon release caused by well loss of containment MEE-01	Yodel condensate	76	300,985 m^3	Seabed release at YOD05 (part of the GWF4 development)
Scenario 2 Well blowout: hydrocarbon release caused by well loss of containment	GWA03 condensate	68	171,033 m^3	Surface release at GWA-08

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Scenario	Hydrocarbon type	Duration (days)	Maximum credible volume	Modelling locations
MEE-01				
Scenario 3 Subsea Loss of Containment: flowlines (GWF1 / GWF2) subsea release outboard of SSIV MEE-02	GWF4 rich fluid composition (GWF Condensate)	< 6 hours	799.7 m^3	Subsea release from GWF2 flowline inlet
Scenario 4 Subsea Loss of Containment: Subsea release from IFL (including 2TL inventory) downstream of SSIV but within 500 m of the GWA platform MEE-02	GWA condensate	< 6 hours	8,090 m^3	Subsea release from IFL downstream of SSIV but within 500 m of GWA facility
Scenario 5 Subsea Loss of Containment: Surface release from IFL (including 2TL inventory) from rupture of riser at the GWA platform MEE-02	GWA condensate	< 6 hours	7,623 m^3	Surface release from IFL
Scenario 6 Topside loss of containment: Instantaneous release from the GWA facility. MEE-03	Gas and GWA Condensate GWA Condensate Marine Diesel	Instantaneous	Gas and GWA Condensate - 135 m^3 GWA Condensate - 403 m^3 Marine Diesel - 343 m^3.	Topside loss from GWA facility
Scenario 7 Marine fuel loss during hydrocarbon bunkering	Marine diesel	15 days	24 m^3	Surface release within the Operational Areas (not modelled)
Scenario 8 Instantaneous release after a loss of marine vessel separation or vessel collision MEE-05	Marine diesel	Instantaneous	1000 m^3	Surface release near the GDA05 well location

6.8.2.2 Hydrocarbon characteristics

Table 6-26 summarises the characteristics of the hydrocarbons used as the basis for the modelling studies and subsequently used to inform the assessment of credible hydrocarbon spills. Additional detail on the characteristics of these hydrocarbons is also provided in the sections below.

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Table 6-26: Characteristics of the hydrocarbon types used for modelling and ecotoxicological studies

Hydrocarbon Type	Density (g/m3)	Viscosity (cP)	Component	Volatile (%)	Semi-volatile (%)	Low volatility (%)	Residual (%)	Aromatics (%)
			Boiling Point (°C)	<180	180–265	265–380	>380	Of whole oil <380
GWA Condensate	0.7449 at 15 °C	1.61 at 15 °C	% of total	65.9	22.5	10.8	0.8	16.3
			% of aromatics	9.1	4.2	3.0	-	-
GWA03 Condensate	0.753 at 15 °C	0.540 at 15 °C	% of total	71.6	19.8	7.0	1.6	13.2
			% of aromatics	9.6	2.7	0.9	-	-
GWF4 rich fluid composition (GWF Condensate)	0.801 at 15 °C	1.030 at 21.4 °C	% of total	62	20	10	8	17.1
			% of aromatics	11.5	3.7	1.9	-	-
Yodel-3 Condensate	0.7605 at 15 °C	0.5403 at 20 °C	% of total	63.1-	25.30	9.10	2.50	8.70
			% of aromatics	1.80	3.45	3.45	-	-
Marine Diesel Oil	0.829 at 25 °C	4.00 at 25 °C	% of total	6.0	34.6	54.4	5.0	3.0
			% of aromatics	1.8	1	0.2	-	-

6.8.2.2.1 GWA Condensate

GWA Condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 65.9% of the oil mass should evaporate within the first 12 hours, a further 22.5% should evaporate within the first 24 hours and a further 10.8% should evaporate over several days. About 0.8% of the oil is shown to be persistent (RPS Group 2021).

The whole oil has a low asphaltene content (<0.5%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle.

Soluble, aromatic, hydrocarbons contribute approximately 16.3% by mass of the whole oil. About 9.1% by mass is highly soluble and highly volatile. A further 7.2% by mass has semi-to-low volatility. These compounds dissolve more slowly but tend to persist in soluble form for longer. Discharge onto the water surface will favour the process of evaporation over dissolution under calm sea conditions, but increased entrainment of oil and dissolution of soluble compounds can be expected under breaking wave conditions (RPS Group 2021).

The mass balance forecast for the constant-wind case (see Figure 6-4) for GWA Condensate shows that about 88.4% of the oil is predicted to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes (RPS Group 2021).

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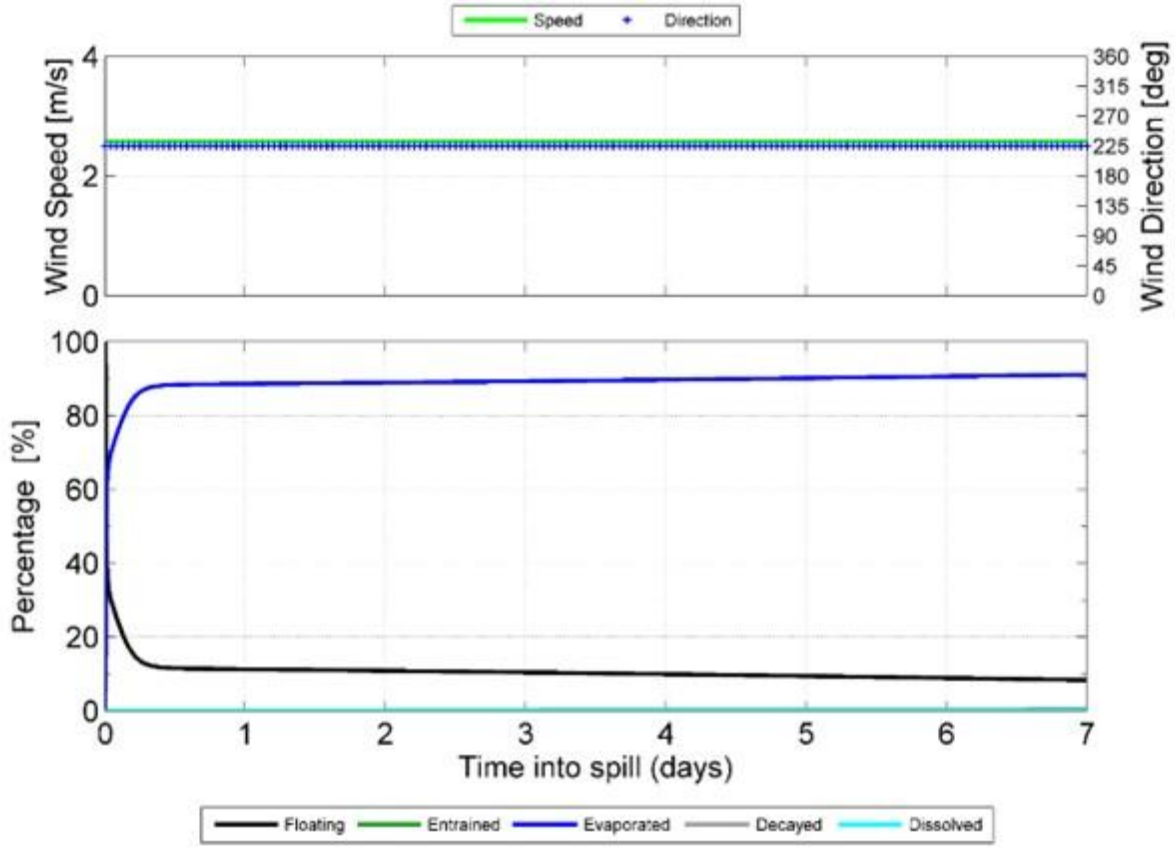


Figure 6-4: Proportional mass balance plot representing the weathering of GWA Condensate spilled onto the water surface as a one-off instantaneous release and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature

Under the variable-wind case (see Figure 6-5), where the winds are of greater strength on average, entrainment of GWA Condensate into the water column is predicted to increase. About 24 hours after the spill, around 13.6% of the oil mass is forecast to have entrained and a further 81.1% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s).

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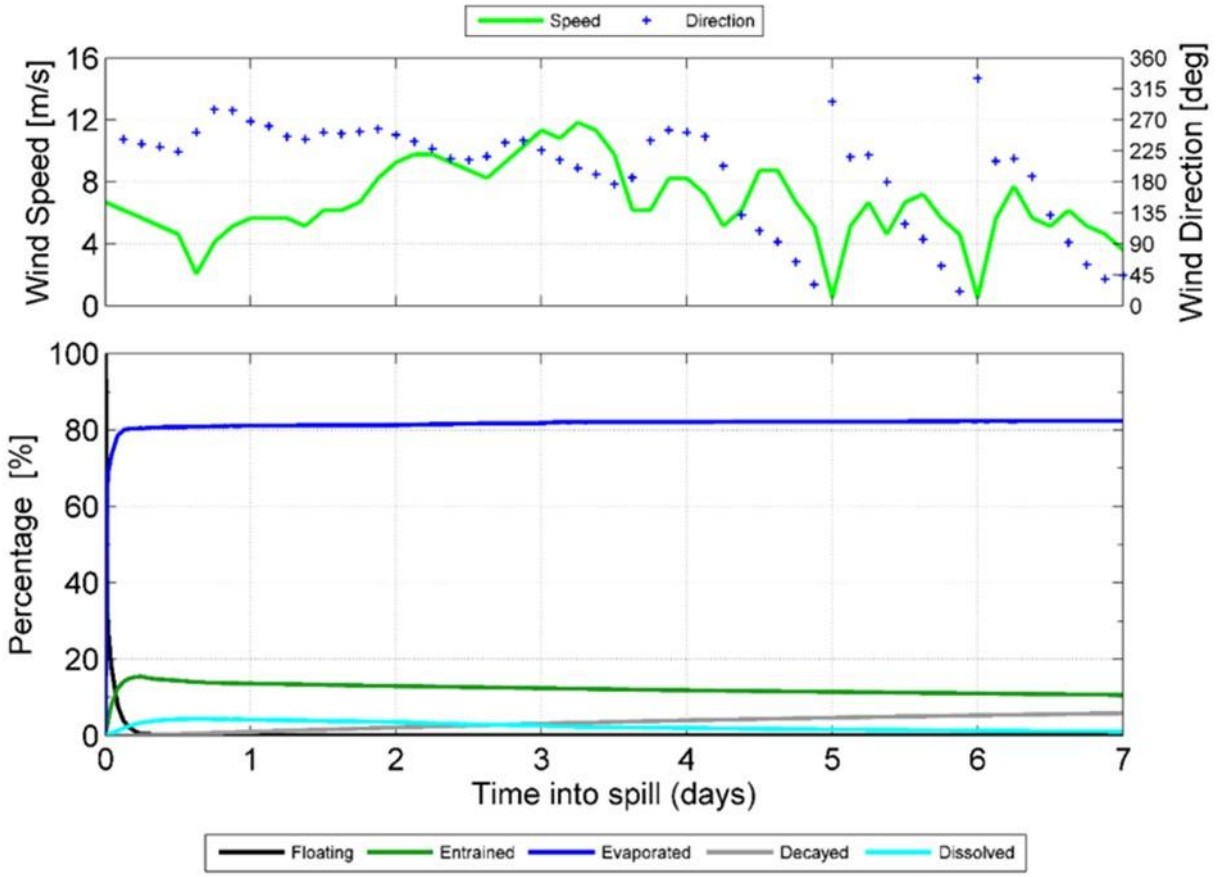


Figure 6-5: Proportional mass balance plot representing the weathering of GWA Condensate spilled onto the water surface as a one-off instantaneous release and subject to variable wind at 27 °C water temperature and 25 °C air temperature

6.8.2.2.2 GWA-03 Condensate

GWA-03 Condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 71.6% of the oil mass should evaporate within the first 12 hours; a further 19.8% should evaporate within the first 24 hours; and a further 7.0% should evaporate over several days. Only about 1.6% of the oil is shown to be persistent (RPS Group 2021).

The whole oil has a low asphaltene content (< 0.5%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle.

Soluble, aromatic, hydrocarbons contribute approximately 13.2% by mass of the whole oil. Around 9.6% by mass is highly soluble and highly volatile. A further 3.6% by mass has semi-to-low volatility. These compounds dissolve more slowly but tend to persist in soluble form for longer. Discharge onto the water surface will favour the process of evaporation over dissolution under calm sea conditions, but increased entrainment of oil and dissolution of soluble compounds can be expected under breaking wave conditions (RPS Group 2021).

The mass balance forecast for the constant-wind case (see Figure 6-6) for GWA-03 Condensate shows that about 91.4% of the oil is predicted to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.

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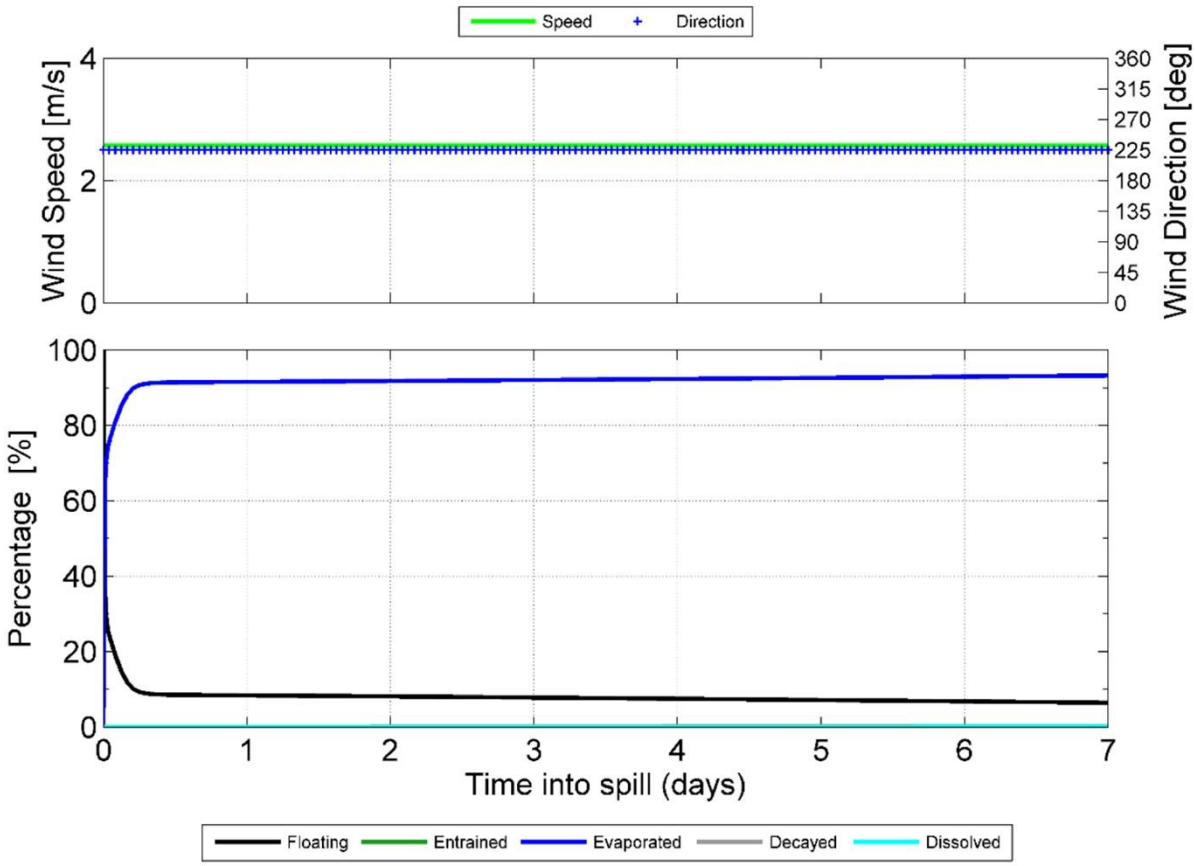


Figure 6-6: Proportional mass balance plot representing the weathering of GWA-03 Condensate spilled onto the water surface as a one-off instantaneous release and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature

Under the variable-wind case (see Figure 6-7), where the winds are of greater strength on average, entrainment of GWA-03 Condensate into the water column is predicted to increase. About 24 hours after the spill, around 11.9% of the oil mass is forecast to have entrained and a further 85.4% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s).

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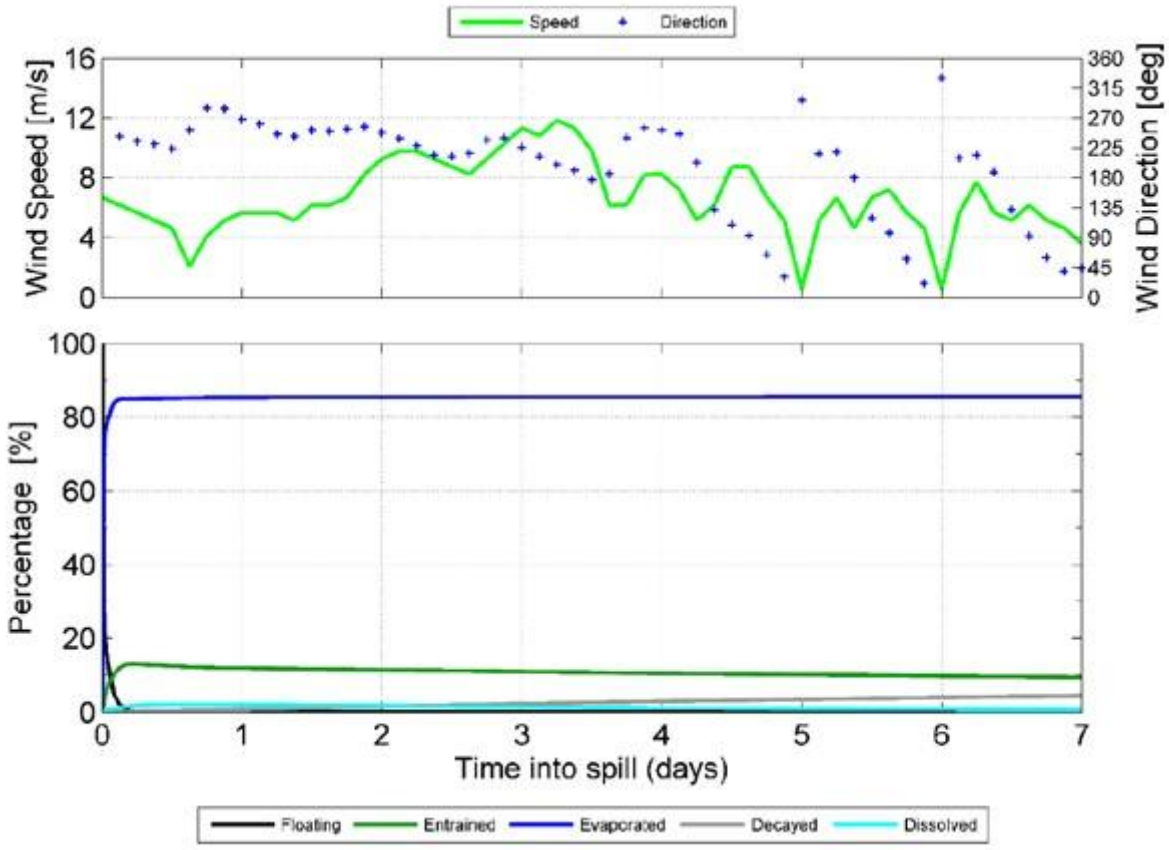


Figure 6-7: Proportional mass balance plot representing the weathering of GWA-03 Condensate spilled onto the water surface as a one-off instantaneous release and subject to variable wind at 27 °C water temperature and 25 °C air temperature

6.8.2.2.3 GWF4 Rich Fluid Composition (GWF Condensate)

The GWF Condensate is made of high proportions of highly volatile hydrocarbons. In general, about 62 % of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 20 % should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 10% should evaporate over several days (265 °C < BP < 380 °C). Approximately 8 % of the oil is shown to be persistent. The aromatic content of the oil is approximately 17.1 %.

If released in the marine environment and in contact with the atmosphere (i.e., surface spill), approximately 82 % by mass of this oil is predicted to evaporate over the first couple of days depending upon the prevailing conditions, with further evaporation slowing over time. The heavier (low volatility) components of the oil tend to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction. Further, the GWF Condensate contains 8% of heavy hydrocarbons (persistent compounds) that are likely to remain on the sea surface for longer periods.

The mass balance forecast for the constant-wind case (Figure 6-8) for GWF Condensate shows that approximately 82% of the oil is predicted to evaporate within 24 hours. Under these calm conditions, most of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.

Under the variable-wind case (Figure 6-9), where the winds are of greater strength, entrainment of GWF Condensate into the water column is indicated to be greater than the constant wind case. Approximately 24 hours after the spill, around 20% of the oil mass is forecast to have entrained and 73% is forecast to have evaporated. The increased level of entrainment in the variable-wind case will result in a higher percentage of

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biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 1% per day with an accumulated total of ~7% after 7 days, in comparison to a rate of ~0.13% per day and an accumulated total of 0.88% after 7 days in the constant wind case.

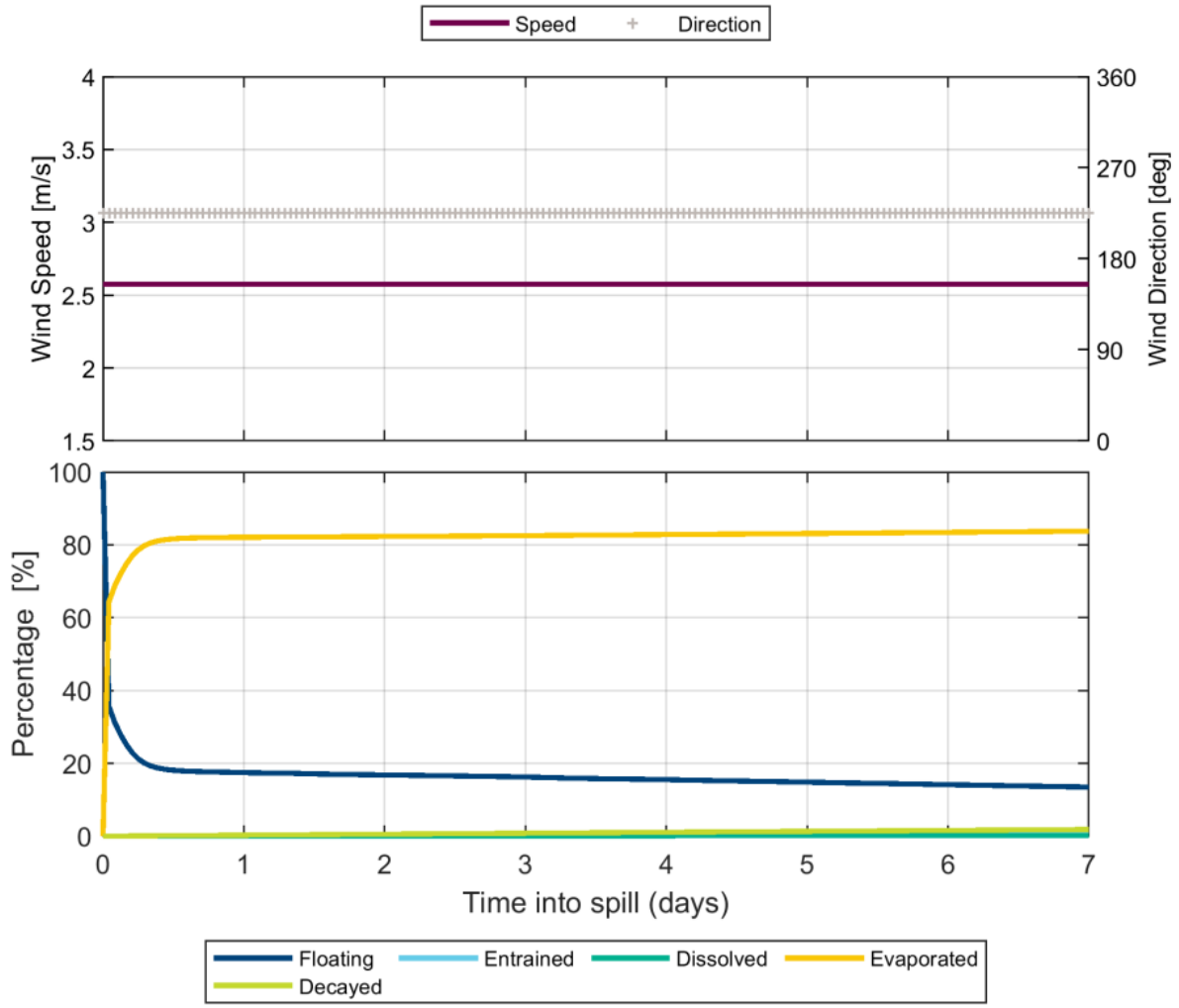


Figure 6-8: Proportional mass balance plot representing the weathering GWF Condensate spilled onto the water surface as a one-off release (50 m3) and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature

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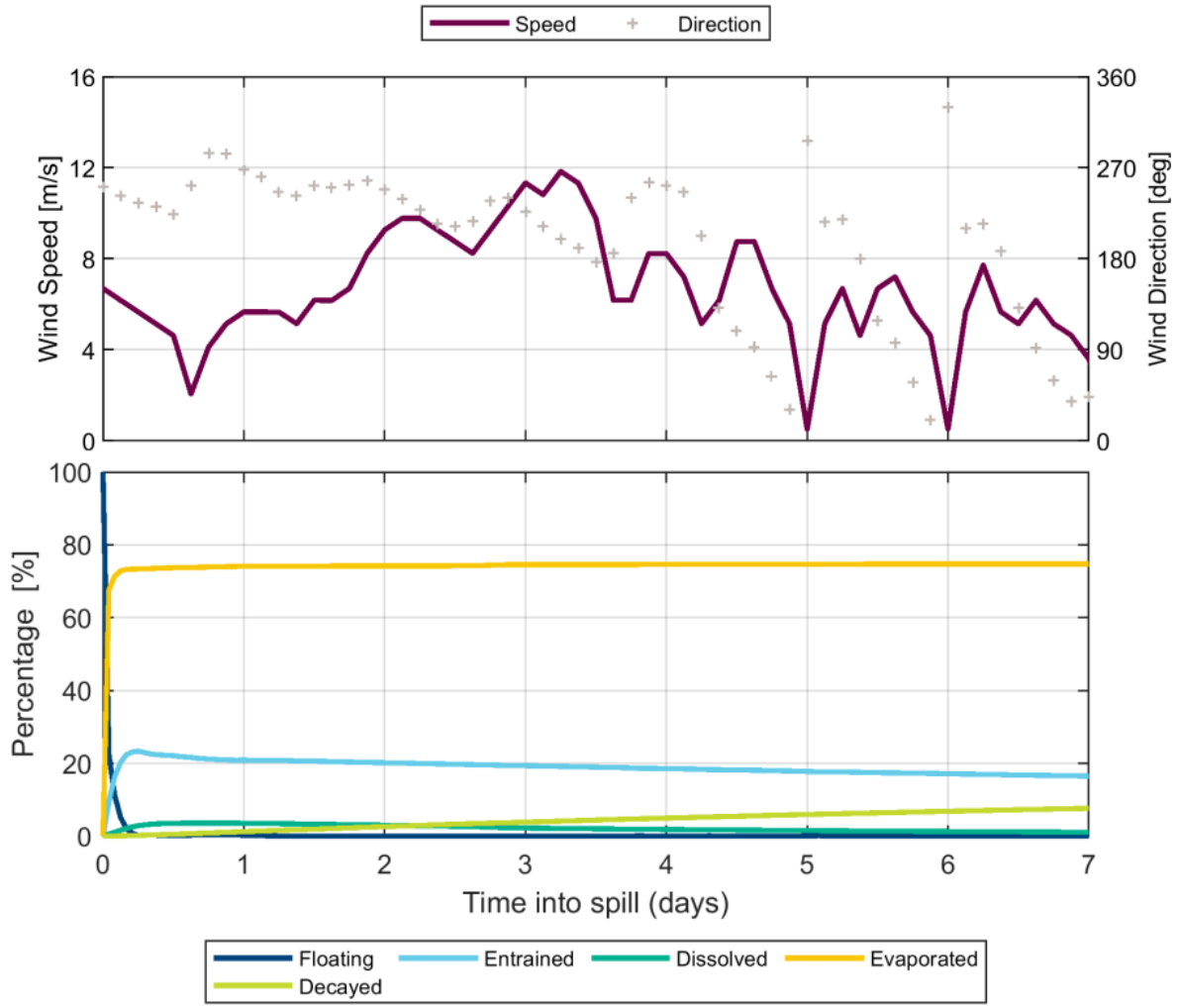


Figure 6-9: Proportional mass balance plot representing the weathering of GWF Condensate spilled onto the water surface as a one-off release (50 m3) and subject to variable wind at 27 °C water temperature and 25 °C air temperature.

6.8.2.2.4 Yodel-3 Condensate

Yodel-3 Condensate (API 54.4) contains a low proportion (2.5% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures (residual). These compounds will persist in the marine environment; however, most of the hydrocarbons that comprise this oil (97.5%) will volatilise at ambient temperatures.

The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which would begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 63.1% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 25.3% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 9.1% should evaporate over several days (265 °C < BP < 380 °C).

The unweathered hydrocarbon mixture has low density (0.76 g/cm^3) and very low dynamic viscosity (0.54 cP). The pour point of the whole mixture (< -36 °C) indicates that it will remain in a liquid state over the annual temperature range observed on the North West Shelf.

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Selective evaporation of the lower boiling-point components will lead to a shift in the physical properties of the remaining mixture, including an increase in the density, viscosity and pour point. Given the low density, viscosity and pour point of the mixture, it is expected that even after weathering the hydrocarbon mixture will not solidify and will remain less dense than seawater.

The whole oil has low asphaltene content (< 0.1%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle. The whole oil also contains ~ 5% wax, therefore there is potential for residual hydrocarbons to be found as wax in the marine environment if this oil is spilled.

Soluble aromatic hydrocarbons contribute approximately 8.7% by mass of the whole oil, mostly in the C11-C20 range of hydrocarbons. These compounds would evaporate slowly if exposed to the atmosphere, leaving the potential for dissolution of a proportion of them into the water column.

The results for the constant-wind case (Figure 6-10) indicate that Yodel-3 Condensate will have a tendency to evaporate fairly rapidly, with 88% of the spilled volume predicted to evaporate and around 10% remaining on the water surface after the first 24 hours under light winds. Negligible levels of entrainment and dissolution are expected under these light wind conditions.

A slightly reduced evaporation rate is predicted in the first 24 hours for the variable-wind case (Figure 6-11). Increased entrainment and dissolution rates are predicted in this case, with a corresponding decrease in the floating oil proportion to negligible levels. The variable-wind case also indicates that, once entrained, the oil tends to remain in the water column and may not resurface even during calm wind periods.

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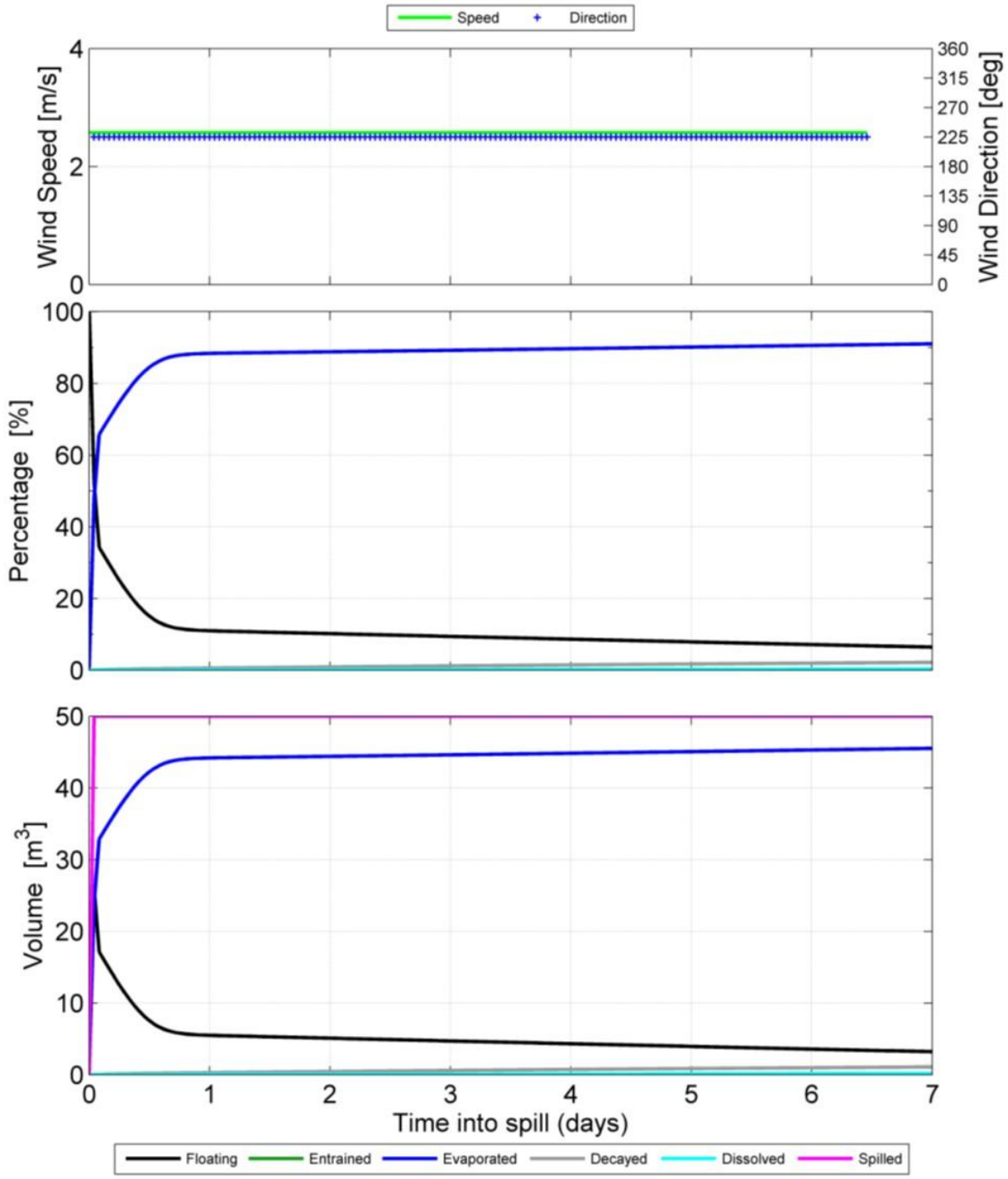


Figure 6-10: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of Yodel-3 Condensate spilled onto the water surface as a one-off release (50 m^3) and subject to a constant 5 kn (2.6 m/s) wind (top panel) at 27 °C water temperature and 25 °C air temperature.

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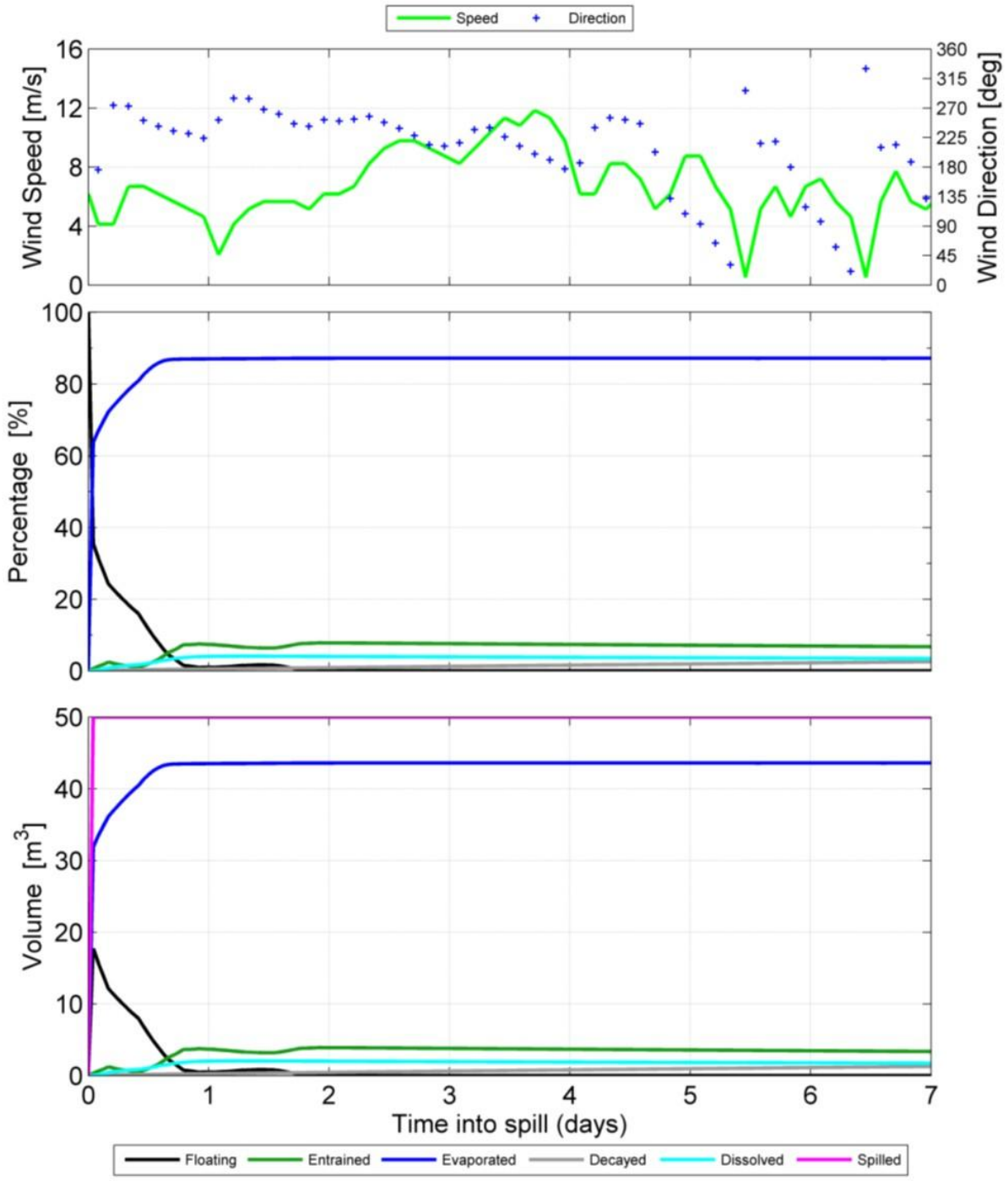


Figure 6-11: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of Yodel-3 Condensate spilled onto the water surface as a one-off release (50 m^3) and subject to variable winds (top panel) at 27 °C water temperature and 25 °C air temperature.

6.8.2.2.5 Marine Diesel

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. In general, about 6% of the oil mass should evaporate within the first 12 hours (boiling point < 180°C); a further 35% should evaporate within the first 24 hours (180°C < boiling point < 265°C); and

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a further 54% should evaporate over several days (265°C < boiling point < 380°C). About 5% of the oil is shown to be persistent. The aromatic content of the oil is about 3%.

The mass balance forecast for the constant-wind case for marine diesel shows that about 41% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface weathers at a slower rate due to comprising the longer-chain compounds with higher boiling points. Evaporation of the residual compounds slows significantly and is then subject to more gradual decay through biological and photochemical processes.

Under the more realistic variable-wind case Figure 6-12, where the winds are of greater strength, entrainment of marine diesel into the water column is indicated to be significant. About 24 hours after the spill, around 72% of the oil mass is forecast to have entrained and a further 24% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds tend to remain entrained beneath the surface under conditions that generate wind waves (about >6 m/s).

The increased level of entrainment in the variable-wind case results in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 2.4% per day with an accumulated total of ~16% after seven days, in comparison to a rate of ~0.2% per day and an accumulated total of 1.3% after seven days in the constant-wind case. Given the large proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons decay and/or evaporate over time scales of several weeks to a few months. This long weathering duration extends the area of potential effect.

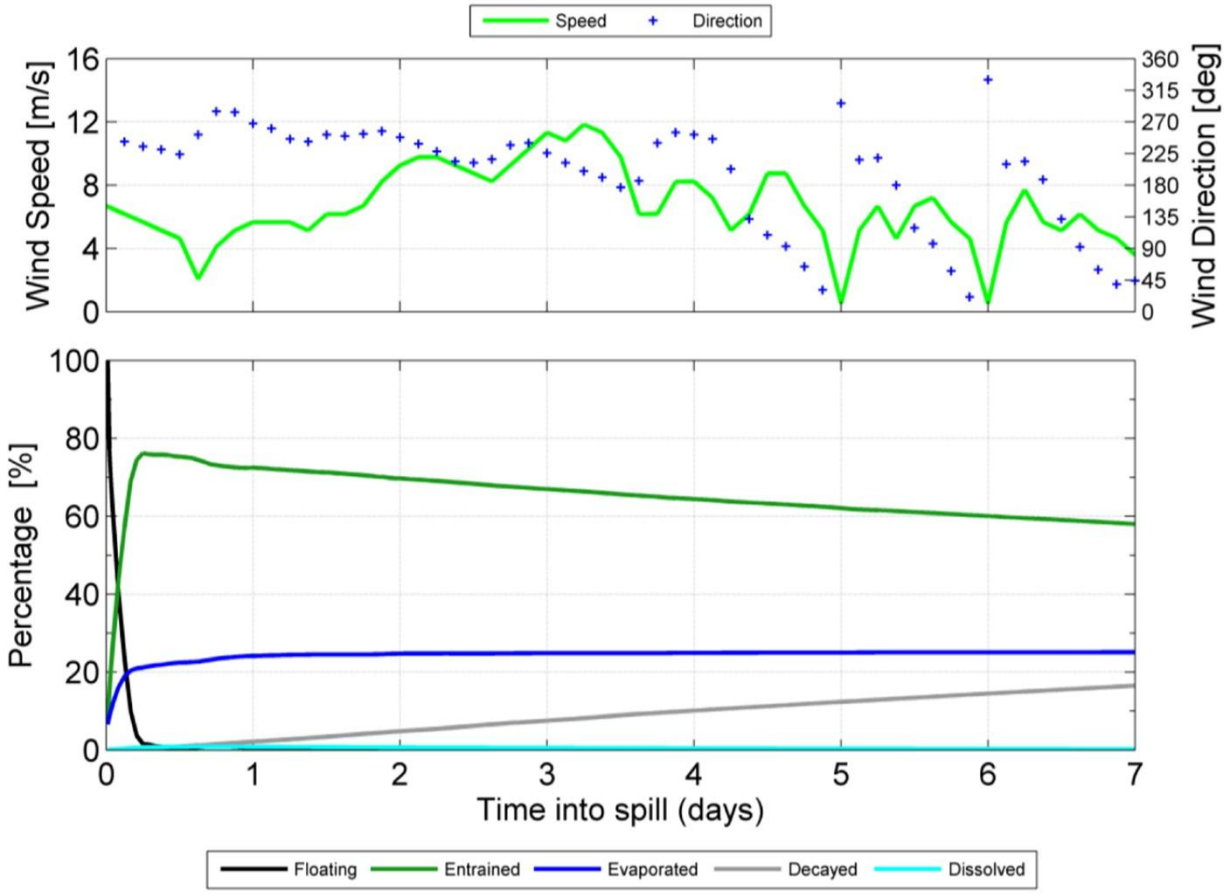


Figure 6-12: Proportional mass balance plot representing the weathering of marine diesel spilled onto the water surface as a one-off release (50 m^3 over one hour) and subject to variable wind at 27°C water temperature and 25°C air temperature.

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6.8.2.3 Environment that may be affected and hydrocarbon contact thresholds

The outputs of the quantitative hydrocarbon spill modelling are used to assess the environmental consequence by delineating which areas of the marine environment could be exposed to hydrocarbon levels that exceed selected hydrocarbon threshold concentrations if a credible hydrocarbon spill scenario occurs. The summary of the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the EMBA.

The EMBA covers a larger area than the area that is likely to be affected during any single spill event, as the model was run for various weather and metocean conditions. The EMBA represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs. Furthermore, as the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each hydrocarbon fate. Together, these EMBA have defined the spatial extent for the existing environment described in Section 4.

The spill modelling outputs are presented as areas that meet threshold concentrations for surface, entrained and dissolved hydrocarbons for the modelled scenarios. Surface spill concentrations are expressed as grams per square metre (g/m^2), with entrained and dissolved aromatic hydrocarbon concentrations expressed as parts per billion (ppb). An additional threshold has been included to define the boundary within which socio-cultural impacts may occur, based on visible surface oil (1 g/m^2) impacting on the visual amenity of the marine environment. Each of these hydrocarbon thresholds are presented in Table 6-27 and described in the subsections below.

Table 6-27: Summary of thresholds applied to the quantitative hydrocarbon spill risk modelling results

Hydrocarbon type	Ecological hydrocarbon thresholds				Socio-cultural hydrocarbon thresholds	
	Surface hydrocarbon (g/m^2)	***Entrained hydrocarbon (ppb)***	***Dissolved aromatic hydrocarbon (ppb)***	***Accumulated hydrocarbons (g/m^2)***	***Surface hydrocarbon (g/m2)***	***Accumulated hydrocarbons (g/m^2)***
Condensate	10	1,000	10	100	1	10
Marine Diesel	10	1,000	10	100	1	10

6.8.2.3.1 Surface hydrocarbon threshold concentration

The spill modelling outputs defined the EMBA for surface hydrocarbons resulting from a spill (contact on surface waters) using a threshold of ≥10 g/m^2 (dull metallic colours) based on the relationship between film thickness and appearance (Bonn Agreement 2015) (Table 6-28). This threshold concentration is used to define an area within which ecological impacts to the marine environment may occur from surface hydrocarbons. It represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.

Thresholds for registering biological impacts resulting from contact of surface slicks have been estimated by different researchers at about 10–25 g/m^2 (French et al. 1999; Koops et al. 2004; NOAA 1996). Potential impacts of surface slick concentrations in this range for floating hydrocarbons may include harm to seabirds through ingestion from preening of contaminated feathers, or the loss of the thermal protection of their feathers. The 10 g/m^2 threshold is the reported level of oiling to instigate impacts to seabirds and is also applied to other wildlife, though it is recognised that 'unfurred' animals, where hydrocarbon adherence is less, may be less vulnerable. 'Oiling' at this threshold is taken to be of a magnitude that can cause a response from the most vulnerable wildlife such as seabirds. Due to weathering processes, surface hydrocarbons will have a lower toxicity due to change in their composition over time. Potential impacts to shoreline sensitive receptors may be markedly reduced in instances where there is extended duration until shoreline contact.

Woodside recognises that hydrocarbons may be present beyond the ecological impact EMBA, at concentrations that may be visible but are not expected to cause ecological impacts. The threshold for visible surface oil (1 g/m^2) has therefore been used to define an additional boundary within which socio-cultural

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impacts to the visual amenity of the marine environment may occur. This area is referred to as the socio-cultural EMBA. Potential impacts to socio-cultural values assessed within these EMBAs include:

- protected areas,
- national and Commonwealth Heritage Listed places,
- tourism and recreation, and
- fisheries.

Table 6-28: The Bonn Agreement oil appearance code

Appearance (following Bonn visibility descriptors)	Mass per area (g/m²)	Thickness (µm)	Volume per area (L/km²)
Discontinuous true oil colours	50 to 200	50 to 200	50,000 to 200,000
Dull metallic colours	5 to 50	5 to 50	5000 to 50,000
Rainbow sheen	0.30 to 5.00	0.30 to 5.00	300 to 5000
Silver sheen	0.04 to 0.30	0.04 to 0.30	40 to 300

6.8.2.3.2 Dissolved hydrocarbon thresholds concentrations

Dissolved hydrocarbons present a narcotic effect resulting from uptake into the tissues of marine organisms. This effect is additive, increasing with exposure concentration or with time of exposure (French-McCay 2002; NRC 2005). The dissolved aromatic threshold of 10 ppb has been selected as a threshold to approximate the potential toxic effects, particularly sublethal effects to sensitive species (French-McCay 2026).

Dissolved hydrocarbons represent the bioavailable fraction of oil in the water column and are therefore the most appropriate metric for assessing potential toxic effects to marine organisms. Toxicity studies consistently demonstrate that adverse biological effects are driven by exposure to dissolved oil components, rather than total oil mass or the physical presence of oil droplets, because only dissolved hydrocarbons can cross biological membranes and interact with target tissues. Acute toxicity datasets and species sensitivity distributions show that the majority of marine species experience no acute effects at dissolved hydrocarbon concentrations at or below 10 ppb, indicating that this concentration is protective of more than 95% of species for acute exposures (French-McCay 2026; Negri et al. 2021; Bejarano et al. 2017).

Experimental and modelling studies demonstrate that toxic effects may begin to occur in the most sensitive species and life stages at dissolved concentrations on the order of 10 ppb, including early biological and sub-lethal responses (French-McCay 2026; Bejarano et al. 2014; McGrath et al. 2018). As such, 10 ppb represents a lower-bound, biologically meaningful exposure value, rather than an arbitrary screening threshold. Use of this concentration is therefore appropriate for identifying ecological features that may be affected by dissolved oil and for assessing potential environmental consequences, while avoiding the implication that widespread or severe toxicity is expected. The 10 ppb dissolved hydrocarbon exposure value thus provides a conservative yet scientifically grounded basis for impact assessment of the dissolved-phase hydrocarbon fate.

As dissolved hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are expected to be associated with ecological impacts (see Detailed impact and risk assessment). Therefore, dissolved hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur. The application of this threshold is conservative as the 10 ppb is an instantaneous value while ecological studies are based on an exposure duration of typically 48 to 96 hours and therefore accounts for uncertainty in consequence from hydrocarbons spills on ecological, social, economic and cultural features of the environment.

6.8.2.3.3 Entrained hydrocarbon threshold concentrations

Entrained hydrocarbons in the water column consist of oil droplets containing a mixture of soluble, semi-soluble and insoluble compounds. The toxicologically relevant fraction of entrained oil is limited to the

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proportion of hydrocarbons that are able to dissolve from droplets into the surrounding water, with multiple experimental and modelling studies demonstrating that toxicity is driven by the dissolved fraction, rather than by droplet mass, and that dissolved hydrocarbons typically represent a small proportion (on the order of ~1%) of fresh oil, with these soluble components lost rapidly as oil weathers (Forth et al. 2017; Redman & Parkerton 2015; French-McCay 2026). Consequently, entrained oil droplets increasingly comprise non-bioavailable material over time, and entrained hydrocarbon concentrations are therefore a poor proxy for toxicity at low concentrations (Forth et al. 2017; Parkerton et al. 2018).

Given this established relationship between oil composition, dissolution processes and weathering, entrained oil concentrations must be substantially higher than dissolved effect thresholds before biologically meaningful exposure is plausible. French-McCay et al. (2018) demonstrate a direct correlation between entrained oil mass and the dissolved fraction derived from it, indicating that entrained concentrations two orders of magnitude greater than dissolved concentrations are required to represent equivalent exposure potential. On this basis, an entrained hydrocarbon exposure value of 1,000 ppb represents a scientifically justified lower-bound threshold for identifying ecological features that may be affected by entrained oil and for assessing potential environmental consequences. This threshold appropriately reflects the limited bioavailability and declining toxicity of entrained oil droplets, while remaining conservative for impact assessment purposes (French-McCay et al. 2018; Negri et al. 2021).

As entrained hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are expected to be associated with ecological impacts. Therefore, entrained hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur. The application of this threshold is conservative as the 1,000 ppb is an instantaneous value whereas laboratory-based ecological studies typically assess toxicity over exposure durations of 48 to 96 hours, such that use of an instantaneous exposure value provides a precautionary margin to account for uncertainty in the assessment of potential ecological, social, economic and cultural consequences of hydrocarbon spills.

6.8.2.3.4 Accumulated hydrocarbon threshold concentrations

Owens et al. (1994) define accumulated hydrocarbon <100 g/m² to have an appearance of a stain on shorelines. French-McCay (2009) defines accumulated hydrocarbons ≥100 g/m² to be the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat. A threshold of ≥100 g/m² has been adopted as the threshold for shoreline accumulation and has been included in the EMBA.

As described above Woodside recognises that hydrocarbons may be present beyond the ecological impact EMBA at low concentrations that may be visible but are not expected to cause ecological impacts. The threshold for visible shoreline accumulation (10 g/m²) has therefore been used to define an additional boundary within which socio-cultural impacts to the visual amenity of the marine environment may occur.

6.8.2.3.5 Environment that may be affected

The use of modelling and threshold-based delineation to define the EMBA is inherently conservative, as it results in predicted exposure extents that are broader and more severe than would reasonably be expected during an actual spill event. This conservatism arises from a combination of modelling assumptions and threshold selection, as outlined below:

- Worst-case volumes: the subsea discharge modelling predicts the potential worst-case volumes for loss of well containment scenarios rather than the expected or likely spill volumes. This ensures the upper bound of uncertainty is captured prior to undertaking the stochastic modelling.
- Inclusion of typical and extreme conditions: the stochastic modelling approach involves running hundreds of simulations that incorporates a wide range of metocean conditions, including both representative and extreme combinations of winds, currents and seasonal variability. This captures infrequent but high-consequence trajectories, expanding the spatial envelope beyond typical spill behaviour.
- Assumes no spill response: Modelling used to derive the EMBA generally excludes the effects of spill response measures (e.g. containment, recovery, dispersant application). This assumes hydrocarbons remain unmitigated, resulting in greater persistence and spread than would occur with an effective response.

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- Application of conservative thresholds: As described above the thresholds used are conservative as they are based on chronic exposure values which require continuous exposure typically over 24 to 96 hours this does not reflect the realistic exposure durations in an offshore environment where hydrocarbons are missed and diluted rapidly in the environment and receptors are moving throughout the water column as well. However, the thresholds applied in the model are based on one instantaneous value being derived in the model resulting in conservative
- Extended simulation periods: Modelling is run over extended durations to capture the full evolution of spill trajectories and delayed transport pathways extending beyond the actual release duration. This allows hydrocarbons to be transported further than may occur within shorter, more realistic exposure windows.
- Constant dispersion rates over distance: Model parameterisation typically applies uniform dispersion and spreading behaviour over time and space. This does not always fully reflect dynamic environmental processes that can enhance dilution or breakup, thereby potentially overestimating persistence and concentration at distance.
- Slower than reality degradation: Conservative assumptions are applied to weathering processes such as evaporation, biodegradation and dispersion as it is based on controlled laboratory studies. The model does not fully account for naturally occurring hydrocarbon-degrading organisms or other environmental factors that can accelerate degradation. This results in hydrocarbons persisting in the modelled environment for longer periods than would be expected under actual conditions.

Collectively, these assumptions ensure that the EMBA represents a precautionary, upper-bound estimate of the spatial extent of potential hydrocarbon exposure, rather than a prediction of the area that would be affected by any single spill event. Consistent with the requirements of Regulation 13(2)(d), the EMBA is intended to identify the full extent of the environment that may be affected by the activity and therefore incorporates conservative modelling assumptions and impact thresholds. The EMBA is derived from the cumulative extent of all modelled scenarios where selected hydrocarbon exposure thresholds are exceeded, across a range of environmental conditions and hydrocarbon fates. As a result, the EMBA is expected to encompass areas where exposure is possible but not necessarily likely, ensuring that all environmental values and sensitivities with a credible pathway for exposure are identified, assessed and considered within the EP.

6.8.2.4 Operational and Scientific Monitoring

A planning area for operational and scientific monitoring is also described in Annex C of the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) (Appendix G). This planning area has been set with reference to the low exposure entrained value of 10 ppb detailed in the NOPSEMA (2019) bulletin Oil Spill Modelling (NOPSEMA 2019). The low exposure threshold is based on the potential for exceeding water quality triggers.

An operational and scientific monitoring program may be activated following a release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) and in particular, any identified pre-emptive baseline areas for the worst-case credible spill scenario or other identified unplanned hydrocarbon releases associated with the operational activities.

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6.8.3 Unplanned hydrocarbon release: well loss of containment (MEE-01)

Context		
Wells and reservoirs – Section 3.5.4 Operational details – Section 3.6	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key ecological features – Section 4.7 Protected places – Section 4.8 Socio-economic– Section 4.10	Stakeholder Consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Release of hydrocarbons resulting from loss of well (seabed) containment (YOD05)	✓	✓	✓	✓	✓	✓	B	B	1	M	LCS GP PJ RBA CV SV	Acceptable, if ALARP	EPO 13
Release of hydrocarbons resulting from loss of platform (surface) well containment (GWA08)		✓	✓	✓	✓	✓							

Description of source of risk

Background

A loss of well containment can lead to an uncontrolled release of reservoir hydrocarbons or other well fluids to the environment (i.e. a well blowout). Woodside has identified a well blowout as the scenario with the worst-case credible environmental outcome for this event. Due to its potential consequences, a loss of well containment is classified as a MEE (MEE-01). A loss of well containment may occur due to a variety of causes, including:

- internal corrosion
- external corrosion
- erosion
- material, design and other defects
- overpressure of the annuli
- fatigue
- extreme weather (wave loading)
- loss of well integrity during maintenance and interventions

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- premature detonation of explosives during well intervention (perforation)
- anchor drag

A number of common failure causes due to SCE failures and human error are presented in the SCE failure and generic human error bowties in Section 6.8.9.

There are three escalation scenarios from other MEEs that can also lead to loss of well containment on the GWA platform, including:

- loss of structural integrity (MEE-04 – Section 6.8.6)
- loss of marine vessel separation (MEE-05 – Section 6.8.7)
- loss of control of suspended load (MEE-06 – Section 6.8.8).

Loss of Well Containment – Credible Scenarios

The Petroleum Activity includes production from the GWA platform, existing subsea developments and future tie-in production wells (including GWF4) described in Section 3.5. The included future tie-in production wells would be designed, constructed, commissioned and operated in accordance with the same well integrity management framework and barrier philosophy as existing GWA subsea wells. For the purposes of this assessment, the future tie-in production wells are represented by the selected worst-case credible release scenarios, which are based on the highest flowing subsea and platform well configurations anticipated within the Petroleum Activity.

Two credible worst-case loss of well containment scenarios were identified for the Petroleum Activity:

- Scenario 1 - Well blow-out at seabed – highest flow rate GWF4 subsea well (YOD05)
- Scenario 2 - Well blow-out at surface – platform wellhead release (GWA08).

The credible worst-case subsea release, Scenario 1, was based on the maximum credible release volume from the highest flow rate subsea well (YOD05). Scenario 2 represents a credible worst-case surface release from a platform well, with GWA08 selected as a representative wellhead location.

Loss of containment duration has been estimated based on the time required to drill a relief well for each scenario. For Scenario 1, the duration is estimated to be 76 days, and for Scenario 2, 68 days. These durations represent conservative estimates, based on relief well timing under the Mutual Aid Memorandum of Understanding and are consistent with the time required to drill a relief well following the Montara loss of well control in 2009 (refer to Appendix G for further discussion).

The modelling inputs for each of these release scenarios are summarised in Table 6-29. The characteristics of Yodel-3 condensate were used as the basis in the modelling for Scenario 1, while the characteristics of the GWA03 Condensate were used for Scenario 2 (see Table 6-26). Refer to Section 6.8.2 for additional information on modelling methods, environmental impact, thresholds and justification of hydrocarbon characteristics.

Table 6-29: Summary of worst-case loss of well containment hydrocarbon release scenarios

Scenario	Hydrocarbon	Duration (days)	Depth (m)	Latitude	Longitude	Total Condensate Release Volume (m^3)
Scenario 1 – Well blowout at seabed (YOD05)	Yodel-3 condensate	76	132	19° 45' 4.365" S	115° 43' 44.79" E	300,985
Scenario 2 – Well blowout at surface (GWA08)	GWA03 Condensate	68	Surface	19°39’ 12.809’’ S	115°55' 42.567" E	171,033

Decision Type, Risk Analysis and ALARP Tools

Woodside implements industry standard practice in well design and construction. In the company’s recent history, it has not experienced any well integrity events that have resulted in significant releases or significant environmental impacts. Woodside has never experienced a worst-case loss of well containment in its operational history.

Decision Type

A decision type ‘B’ has been applied to this risk under the Guidance on Risk Related Decision Making (OEUK 2025). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk based tools, including the Bowtie Methodology (described in Section 2.5.3) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and stakeholder consultation.

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The release of hydrocarbons as a result of well loss of containment is classified as a Major Environment Event (MEE-01). The hazard associated with this MEE is hydrocarbons in reservoirs, wells, wellheads and xmas trees for GWA platform wells or subsea wells tied-back to the GWA platform.

Quantitative Spill Risk Assessment

Spill modelling of each of the worst-case credible loss of well containment spill scenarios was undertaken by RPS, on behalf of Woodside, over a 76 and 68 day simulation length for Scenario 1 and 2, respectively, to determine the fate of hydrocarbons released based on the assumptions in Section 6.8.2. Modelling was undertaken over all seasons to address year-round operations. This provides a conservative estimate of the EMBA and the potential impacts from the identified worst-case credible release volumes for both loss of well containment scenarios.

Hydrocarbon Characteristics

The hydrocarbon characteristics for Yodel-3 condensate and GWA-03 condensate are summarised in Table 6-26 and described in more detail in Section 6.8.2.2.

Likelihood

Woodside has a strong history of implementing industry standard practice in well design and construction. In the company's 70-year history, it has not experienced any well integrity events that have resulted in significant releases or significant environmental impacts.

The blowout likelihood was evaluated using blowout and well release frequencies based on SINTEF offshore blowout database as analysed in the IOGP 2019 Study Risk Assessment Data Directory Blowout Frequencies – Report 434-02 (September 2019). This uses data from 1980-2014 to determine likelihood for well blowouts and releases. For a gas well, the IOGP study calculated gas blowout frequency during production as 7.20x10-5 per year per well.

- In accordance with the Woodside Risk Matrix, a worst-case loss of well containment has been defined as a 'highly unlikely' event (likelihood Level 1) as it 'has occurred once or twice in the industry' (experience-based likelihood) and aligns with a frequency of a '1 in 10,000 to 1 in 100,000 year' event. Information to support this likelihood determination is outlined below: SINTEF and Lloyds data presented in the IOGP 2019 blowout frequencies study considers production well integrity events between 1980 and 2011, with some additional data from the North Sea between 2011 and 2014. Frequencies are informed by incidents which occurred in Gulf of Mexico prior to standards improvement following the Macondo event. Similarly, improvements in standards have been achieved in the North Sea compared to the pre-Macondo era. External causes are excluded for subsea production wells, as causes discussed appears to only be relevant to dry-tree/platform wells.
- For the international blowout incidents analysed, these are expected to have resulted in varied release outcomes with varied flow and environmental consequence outcomes – not all are aligned with a worst case unconstrained full-bore blowout, from the highest flowing well, nor necessarily required a relief well to remediate (which is the basis for this risk assessment)
- Woodside is aligned to international best practice – the O&G UK (now OEUK) Well Lifecycle Integrity Guidelines (post-Macondo industry improvements). Woodside continues to apply a rigorous well integrity management program (refer WOMP) as required under WMS and Australian regulations, including verification, and testing of key barriers including SSSVs.
- Additionally, when considering likelihood from an 'Experience' perspective, and considering the significant environmental consequence likelihood as the outcome of a blowout event; historical blowouts resulting in major impacts to the environment aligns with "occurred once of twice in the industry" Hence, alignment with Highly Unlikely likelihood classification is deemed appropriate.

The overall risk ranking for this MEE is "Moderate".

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon were considered during the risk assessment for a worst-case loss of well containment. These considerations were informed primarily by the outputs from the numerical modelling study, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (Section 6.8.2), and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence assessment

Environment that may be affected

The YOD05 scenario (Scenario 1) has been identified as the worst-case loss of well containment based on release volume and spatial extent. Therefore, Table 6-30 lists the key receptor locations and sensitivities potentially contacted above the socio-cultural EMBA and EMBA impact thresholds for Scenario 1. The GWA08 platform release (Scenario 2) is predicted to result in one instance of shoreline accumulation at concentrations equal to or greater than 100 g/m^2 (Muiron Islands and the Muiron Islands MMA) therefore this has been incorporated into Table 6-21.

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Surface hydrocarbons (impact threshold -10 g/m^2)

- Scenario 1: The spill modelling results for floating hydrocarbons indicate that concentrations equal to or greater than the 10 g/m^2 thresholds could potentially be found, in the form of slicks, up to 99 km (west) from the release location. The highest probability of contract from films at the 10 g/m^2 thresholds was 80% at Rankin Bank.
- Scenario 2: The spill modelling results for floating hydrocarbons indicate that concentrations equal to or greater than 10 g/m^2 thresholds could potentially be found, in the form of slicks, up to 20 km (west) from the release location. Contact from films at the 10 g/m^2 thresholds was not predicted.

Entrained hydrocarbons (impact threshold – 1,000 ppb)

- Scenario 1: Entrained hydrocarbon concentrations equal to or greater than the 1,000 ppb ecological threshold are predicted to be found up to 166 km (south-west) from the release location. The maximum entrained oil concentration forecast for any receptor is predicted to be 3,135 ppb at Rankin Bank.
- Scenario 2: Entrained hydrocarbon concentrations equal to or greater than the 1,000 ppb ecological threshold are predicted to be found up to 319 km (south-west) from the release location. The maximum entrained oil concentration forecast for any receptor is predicted to be 1,506 ppb at the Muiron Islands MMA.

Dissolved hydrocarbons (impact threshold – 10 ppb)

- Scenario 1: Dissolved hydrocarbon concentrations equal to or greater than the 10 ppb ecological threshold are predicted to be found up to around 860 km (south-west) from the release location. The maximum dissolved hydrocarbon concentration forecast for any receptor is predicted as 7,080 ppb at Rankin Bank.
- Scenario 2: Dissolved aromatic hydrocarbon concentrations equal to or greater than the 10 ppb ecological threshold are predicted to be found up to around 753 km (south-west) from the release location. The maximum dissolved aromatic hydrocarbon concentration forecast for any receptor is predicted as 1,664 ppb at Rankin Bank.

Accumulated hydrocarbons (shoreline oil) (impact threshold -100 g/m^2)

- Scenario 1: No receptors are predicted to be contacted by shoreline hydrocarbons at 100 g/m^2 threshold with above <1% probability.
- Scenario 2: The Muiron Islands and the Muiron Islands MMA receptors are predicted to be contacted by shoreline hydrocarbons at concentrations equal to or greater than 100 g/m^2. The worst-case shoreline hydrocarbon concentration is predicted as 199 g/m^2 at the Muiron Islands and the Muiron Islands MMA receptors.

Summary of environmental value(s) at risk

Figure 4-1 presents the full extent of the EMBA for loss of well containment (within which all other credible hydrocarbon spill EMBAs are contained); i.e. the sensitive receptors and their locations that may be exposed to hydrocarbons (surface, entrained, dissolved and accumulated) at or above the set threshold concentrations in the unlikely event of a loss of well containment during the Petroleum Activity. Loss of containment has the potential to result in a change in water quality which can impact receptors within the EMBA. Details of these receptors are outlined in Section 4. The potential biological and ecological impacts of an unplanned hydrocarbon release as a result of a loss of well containment during the Petroleum Activity are discussed in the following sections.

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Table 6-30: EMBA – key receptor locations and sensitivities potentially contacted above impact thresholds by loss of well containment with summary hydrocarbon spill contact

Environmental setting	Receptor	Environmental, social, cultural, heritage and economic aspects presented as per the environmental risk definition (Woodside's risk management procedure)																															Probability of hydrocarbon contact and fate (%)[1]					
		Physical		*Biological*																			*Socio-economic and Cultural*											*Socio-cultural hydrocarbon thresholds*		*Ecological hydrocarbon thresholds*			
		Water quality	*Marine sediment*	*Marine primary producers*			*Other communities / habitats*								*Protected species*									*Other species*																
		Open water – (pristine)	Marine sediment – (pristine)	Coral reef	Seagrass beds / Macroalgae	Mangroves	Spawning / nursery areas	Open water – Productivity / upwelling	Non-biogenic reefs	Offshore filter feeders and/or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (foraging and internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Seabirds and/or migratory shorebirds	Pelagic fish populations	Resident / Demersal Fish	Fisheries – commercial	Fisheries – traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Underwater Cultural Heritage	Offshore Oil and Gas Infrastructure (topside and subsea)	Surface hydrocarbon (1 to 10 g/m^2)	Accumulated hydrocarbon (1 to 10 g/m^2)	Surface hydrocarbon (>10 g/m^2)	Entrained hydrocarbon (≥1,000 ppb)	Dissolved hydrocarbon (≥10 ppb)	Accumulated hydrocarbons (>100 g/m^2)
Offshore	Argo-Rowley Terrace MP	✓						✓							✓	✓			✓				✓	✓	✓		✓			✓						5	
	Gascoyne MP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓					48	
	Montebello MP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		14		2	5	100	
	Ningaloo MP										✓	✓	✓	✓					✓				✓					✓	✓						46	
	Shark Bay MP	✓	✓		✓					✓					✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓						6	
Mainland (nearshore)	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			8			19	
Island Groups	Barrow Island (including MMA, MP, Boodie and Middle Islands and NRs)	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		5			30	
	Montebello Islands (including MP and Hermite Islands)	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			8			22	
	Muiron Islands (includes MMA, State Marine Park, and Sunday Island)	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓	✓			31			48	2*

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Environmental setting	Receptor	Environmental, social, cultural, heritage and economic aspects presented as per the environmental risk definition (Woodside's risk management procedure)																												Probability of hydrocarbon contact and fate (%)[1]					
		Physical		*Biological*																			*Socio-economic and Cultural*							*Socio-cultural hydrocarbon thresholds*		*Ecological hydrocarbon thresholds*			
		Water quality	*Marine sediment*	*Marine primary producers*			*Other communities / habitats*								*Protected species*									*Other species*												
		Open water – (pristine)	Marine sediment – (pristine)	Coral reef	Seagrass beds / Macroalgae	Mangroves	Spawning / nursery areas	Open water – Productivity / upwelling	Non-biogenic reefs	Offshore filter feeders and/or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (foraging and internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Seabirds and/or migratory shorebirds	Pelagic fish populations	Resident / Demersal Fish	Fisheries – commercial	Fisheries – traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Underwater Cultural Heritage	Offshore Oil and Gas Infrastructure (topside and subsea)	Surface hydrocarbon (1 to 10 g/m²)	Accumulated hydrocarbon (1 to 10 g/m²)	Surface hydrocarbon (>10 g/m²)	Entrained hydrocarbon (≥1,000 ppb)	Dissolved hydrocarbon (≥10 ppb)	Accumulated hydrocarbons (>100 g/m²)
	Southern Pilbara Islands (Bessieres, Direction, Flat, Fly, Locker Island, Middle, Passage, Peak, Round, Serrurier, Table, Thevenard, Twin, Great Sandy Island NR, North Sandy Island NR, Thevenard Island NR)	✓	✓		✓		✓		✓			✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓		✓	✓			17			43	
State Marine Parks and Nature Reserves	Ningaloo Coast WH										✓	✓	✓	✓						✓			✓						✓	✓			8			46	
State Marine Parks and Nature Reserves	Ningaloo MP (State)										✓	✓	✓	✓						✓			✓						✓	✓			8			37	
National Park	Cape Range	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓			✓	✓						10	
Submerged Shoals	Montebello Shoals	✓	✓	✓			✓	✓		✓					✓	✓				✓	✓	✓	✓		✓	✓											6	
Submerged Shoals	Barrow Island Reefs and Shoals (including Poivre Reef and Tryal Rocks)	✓	✓	✓			✓	✓		✓					✓	✓				✓	✓	✓	✓		✓	✓											47	
Submerged Shoals	Ningaloo Reef	✓	✓	✓			✓	✓		✓					✓	✓				✓	✓	✓	✓		✓	✓											28	
Submerged Shoals	North West Reef	✓	✓	✓			✓	✓		✓					✓	✓				✓	✓	✓	✓		✓	✓											14	
Submerged Shoals	Glomar Shoal	✓	✓	✓			✓	✓		✓					✓	✓				✓	✓	✓	✓		✓	✓											8	

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Environmental setting	Receptor	Environmental, social, cultural, heritage and economic aspects presented as per the environmental risk definition (Woodside's risk management procedure)																												Probability of hydrocarbon contact and fate (%)[1]					
		Physical		*Biological*																		*Socio-economic and Cultural*								*Socio-cultural hydrocarbon thresholds*		*Ecological hydrocarbon thresholds*			
		Water quality	*Marine sediment*	*Marine primary producers*			*Other communities / habitats*							*Protected species*								*Other species*													
		Open water – (pristine)	Marine sediment – (pristine)	Coral reef	Seagrass beds / Macroalgae	Mangroves	Spawning / nursery areas	Open water – Productivity / upwelling	Non-biogenic reefs	Offshore filter feeders and/or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (foraging and internesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Seabirds and/or migratory shorebirds	Pelagic fish populations	Resident / Demersal Fish	Fisheries – commercial	Fisheries – traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Underwater Cultural Heritage	Offshore Oil and Gas Infrastructure (topside and subsea)	Surface hydrocarbon (1 to 10 g/m^2)	Accumulated hydrocarbon (1 to 10 g/m^2)	Surface hydrocarbon (>10 g/m^2)	Entrained hydrocarbon (≥1,000 ppb)	Dissolved hydrocarbon (≥10 ppb)	Accumulated hydrocarbons (>100 g/m^2)
	Pilbara Reefs and Shoals (including Brewis Reef, Dailey Shoal, Fairway Reef, Hood Reef, Outtrim Patches, Penguin Bank, Rosily Shoals and Trap Reef)	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓		✓	✓									37	
	Greater Western Flank Reefs and Shoals (including Rankin Bank, Wilcox Shoal and Unnamed Shoal)	✓	✓	✓			✓	✓		✓						✓				✓		✓		✓	✓	✓		✓			99		80	9	100	

✓ = Sensitivity potentially contacted above impact thresholds

Note 1: Probabilities greater than 1.

Note 2: Where multiple locations have been grouped, the highest probability value among these locations has been included in the table.

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Environmental value(s) at risk
Open water environment (near spill area)
Air quality A hydrocarbon release during a loss of well containment has the potential to result in localised, temporary reduction in air quality and contribution of greenhouse gases to the global concentration of these gases in the atmosphere. Potential impacts from reduced air quality are expected to be minor, short-term and predominantly localised. There is potential for possible human health effects for workers in the immediate vicinity of atmospheric emissions if there is a hydrocarbon release during a loss of well containment. The ambient concentrations of methane and VOCs released from diffuse sources is difficult to accurately quantify, although the behaviour and fate is predictable in open offshore environments as it is dispersed rapidly by meteorological factors such as wind and temperature. Methane and VOC emissions from a hydrocarbon release in such environments are rapidly degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals. Due to the unlikely occurrence of a loss of well containment; the temporary nature of any methane or VOC emissions (from either gas surfacing or weathering of liquid hydrocarbons from a loss of well containment); the predicted behaviour and fate of methane and VOCs in open offshore environments; and the significant distance from the Operational Area to the nearest sensitive air shed (town of Dampier, about 130 km away), the potential impacts are expected to be minor and short-term.
Water quality Water quality would be affected in the offshore environment within the EMBA due to hydrocarbon contamination from entrained, dissolved and surface hydrocarbons. Due to the weathering processes of the hydrocarbons, impacts to water quality are anticipated to be minor long term and/or significant short term as a result of hydrocarbon contamination above background levels.
Marine sediment quality In the event of a surface loss of well containment from the platform, spill modelling predicts that a large mass (88.4%) of the oil is predicted to evaporate over the first couple of days depending on the prevailing conditions. The heavier (low volatility) components of the oil will remain entrained into the upper water column due to wind-generated waves and can subsequently resurface if wind-waves abate. It is unlikely that marine sediment quality will be impacted in the event of loss of well containment surface release. In the event of loss of a subsea well containment, studies of hydrocarbon concentrations in deep sea sediments in the vicinity of a major well blowout indicate hydrocarbon from the blowouts can be incorporated into marine sediments (Romero et al. 2015). Proposed mechanisms for hydrocarbon contamination of sediments include sedimentation of hydrocarbons and direct contact between submerged plumes and the seabed (Romero et al. 2015). In the event of a major hydrocarbon release at the seabed, modelling indicates that a pressurised release of condensate would atomise into droplets that would be transported into the water column to the surface. As a result, the extent of potential impacts to the seabed area at and surrounding the release site would be confined to a localised footprint. Marine sediment quality would be reduced as a consequence of hydrocarbon contamination for a small area within the immediate release site for a long to medium term.

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Benthic fauna communities

As described above, in the event of a surface loss of well containment from the platform, spill modelling predicts that most of the entrained, dissolved and surface hydrocarbons would be found in the upper water column. It is unlikely that benthic fauna communities would be impacted in the event of loss of well containment surface release.

In the event of a loss of well containment at the seabed, the spill modelling predicted hydrocarbon droplets would be entrained in a gas plume, transporting them through the water column and to the upper water column and sea surface. As a result, the low sensitivity benthic communities associated with the unconsolidated, soft sediment habitat within the Operational Area are generally not expected to be exposed to released hydrocarbons. A localised area of impact relating to the hydrocarbon plume at the point of release is however predicted, which would result in a small area of seabed and any associated epifauna and infauna being exposed to hydrocarbons. Impacts to benthic communities within the Operational Area would subsequently be limited to the immediate area around the release site and may include lethal or sub-lethal impacts.

Within the offshore waters of the EMBA, impacts to benthic fauna on the seafloor are not anticipated as hydrocarbons are not expected to gravitate toward the seafloor (as described above).

Benthic fauna at geomorphic features located within the water column such as shoals and banks may be impacted by dissolved and/or entrained hydrocarbons. Spill modelling indicates that Rankin Bank, for example, would be contacted by dissolved hydrocarbons, and Glomar Shoals KEF is located within the EMBA. These features support benthic communities that may be impacted by these hydrocarbons. Notably, given the depths of Rankin Bank and Glomar Shoals KEF, the potential for impacts to benthic communities is considered to be significantly reduced given hydrocarbons will primarily feature in the upper water column.

Pelagic and demersal fish

Demersal and pelagic fish species are associated with the following offshore features within the EMBA (described in Appendix C, Section 6.2):

- Ancient Coastline at the 125 m Depth Contour KEF – overlaps the Operational Area
- Rankin Bank – about 3.7 km west of the Operational Area.
- Continental Slope Demersal Fish Communities KEF – 25 km west-south west of the Operational Area
- Glomar Shoal KEF – about 45.2 km east of the Operational Area
- Glomar Shoal – about 51.5 km east of the Operational Area

There are two other shoals within or close to the Operational Area that are relatively shallow:

- Unnamed Shoal – water depths of between 40 and 50 m, located within the Operational Area
- Wilcox Shoal – water depths of 25 to 80 m, located 2.4 km from the Operational Area.

Unnamed Shoal supports some high relief coral reef but lacks the extent and structural complexity of the coral habitat on Wilcox Shoal (Worley 2025). Similarly, at Wilcox Shoal the habitat transitions from coral-dominated within the reef top into consolidated cobbles (coral rubble) and unconsolidated (soft) sand with sparsely distributed hard corals and other invertebrates including octocorals and porifera (e.g. gorgonians, sea whips, soft corals, sponges, and sea fans) along the shoal slope at ~30 m to 60 m depth (Worley 2025). Deeper water habitats surrounding Unnamed Shoal are very similar to Wilcox Shoal consisting of sparsely distributed gorgonians, sea whips, soft corals, sponges, and sea fans (Worley 2025).

These KEFs and geomorphic features may host relatively diverse or abundant fish assemblages compared to the otherwise relatively featureless continental shelf habitats of the NWMR. Impacts to KEFs are discussed separately below. In summary, impacts to these features are considered to be unlikely. Indirect impacts due to decreased habitat quality at these KEFs to pelagic and demersal fish communities are, therefore, considered unlikely. Impacts to pelagic fish (associated with receptors such as Glomar Shoals and Rankin Bank) from hydrocarbons are described herein.

Fish mortalities are rarely observed to occur as a result of hydrocarbon spills (International Tanker Owners Pollution Federation 2011b). This has generally been attributed to the possibility that pelagic fish are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the spill affected areas. Fish that have been exposed to dissolved aromatic hydrocarbons are capable of eliminating the toxicants once placed in clean water. Hence individuals exposed to a spill are likely to recover (King et al. 1996). Where fish mortalities have been recorded historically, the spills (resulting from the groundings of the tankers Amoco Cadiz in 1978 and the Florida in 1969) have occurred in sheltered bays.

Laboratory studies have shown that adult fish are able to detect hydrocarbons in water at very low concentrations, and large numbers of dead fish have rarely been reported after hydrocarbon spills (Hjermann et al. 2007). This suggests that juvenile and adult fish are capable of avoiding water contaminated with high concentrations of hydrocarbons. However, sub-lethal impacts to adult and juvenile fish may be possible, given long-term exposure (days to weeks) to polyaromatic hydrocarbon (PAH) concentrations (Hjermann et al. 2007). While modelling of the loss of well containment indicates the potential EMBA for dissolved hydrocarbons is relatively extensive, no time-integrated exposure metrics were modelled; given the oceanographic environment within the EMBA, PAH exposures in the order of weeks for pelagic fish are not considered credible.

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The effects of exposure to oil on the metabolism of fish appears to vary according to the organs involved, exposure concentrations and route of exposure (waterborne or food intake). Oil reduces the aerobic capacity of fish exposed to aromatics in the water and to a lesser extent affects fish consuming contaminated food (Cohen et al. 2005). The liver, a major detoxification organ, appears to be the organ where anaerobic activity is most impacted, probably increasing anaerobic activity to facilitate the elimination of ingested oil from the fish (Cohen et al. 2005).

Fish are perhaps most susceptible to the effects of spilled oil in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Contact with oil droplets can mechanically damage feeding and breathing apparatus of embryos and larvae (Fodrie and Heck 2011). The toxic hydrocarbons in water can result in genetic damage, physical deformities and altered developmental timing for larvae and eggs exposed to even low concentrations over prolonged timeframes (days to weeks) (Fodrie and Heck 2011). More subtle, chronic effects on the life history of fish as a result of exposure of early life stages to hydrocarbons include disruption to complex behaviours such as predator avoidance, reproductive and social behaviour (Hjermann et al. 2007). Prolonged exposure of eggs and larvae to weathered concentrations of hydrocarbons in water has also been shown to cause immunosuppression and allows expression of viral diseases (Hjermann et al. 2007). PAHs have also been linked to increased mortality and stunted growth rates of early life history (pre-settlement) of reef fishes, as well as behavioural impacts that may increase predation of post-settlement larvae (Johansen et al. 2017). However, the effect of a hydrocarbon spill on a population of fish in an area with fish larvae and/or eggs, and the extent to which any of the adverse impacts may occur, depends greatly on prevailing oceanographic and ecological conditions at the time of the spill and its contact with fish eggs or larvae.

Hydrocarbons above ecological thresholds may subsequently impact populations located near to the release location for the worst-case spill scenario, with lethal impacts not considered likely in this offshore environment. The consequence of a loss of well containment to pelagic and demersal fish and to associated KEFs is moderate, as environmental values are present in an area of heightened sensitivity which may be limited in their ability to recover.

Protected places

Receptors

The AMPs listed in Section 4.8 may be affected by a worst-case spill scenario. The AMPs predicted to potentially be contacted in the event of a loss of well containment by floating hydrocarbons are Montebello Marine Park, and by entrained and dissolved hydrocarbons are Argo-Rowley Terrace, Gascoyne, Montebello and Ningaloo Marine Parks.

The state Marine Parks predicted to potentially be contacted by entrained and dissolved hydrocarbons are Barrow Island MMA, Barrow Island MP (State), Montebello Island MP, Muiron Island MMA, Ningaloo Coast WH and Ningaloo MP (State).

No Ramsar wetlands were predicted to be potentially contacted by accumulated hydrocarbons within socio-cultural thresholds (10 – 100 g/m^2).

Impacts

The Montebello Marine Park which overlaps the Operational Area is predicted to be contacted by hydrocarbons. Impacts to this AMP are discussed below. Impacts to the natural, cultural, heritage and socio-economic values of the other AMPs and MPs predicted to be contacted by hydrocarbons in a worst-case spill scenario are expected to be similar, however, of lower severity and duration due to their distance of at least 100 km further from the Operational Area.

<u>Montebello Marine Park</u>

The Montebello Marine Park comprises an area of about 3,413 km², all of which is zoned as a Multiple Use Zone (IUCN VI). This AMP ranges in depth from less than 15 m up to 150 m.

The Montebello Marine Park is significant as it contains habitats, species and ecological communities, representative of the Northwest Shelf Province. It overlaps the Ancient Coastline at the 125 m Depth Contour KEF (see 'Key Ecological Features' for a discussion of impacts to KEFs). The AMP provides connectivity between the deeper waters of the continental shelf and slope, and the adjacent Barrow Island and Montebello Islands State Marine Parks. A prominent seafloor feature in the AMP is Trial Rocks, which consists of two close coral reefs that are emergent at low tide. There is subsequently potential for impacts to shallow coral reef communities at Trial Rocks, as discussed in the section 'Marine Primary Producers – Coral Reef'. The specific values of the AMP and associated impacts are summarised here.

Natural values – The AMP includes diverse benthic and pelagic fish communities and ancient coastline thought to be an important seafloor feature (KEF) and a migratory pathway for humpback whales (BIA). The AMP supports a range of species, including those listed as threatened, migratory, marine and/or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, internesting, foraging, mating and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks. Impacts to the relevant species and BIAs are discussed in the sections below.

Cultural values – There is limited information about the cultural significance of this AMP, however, it is noted that sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. Potential impacts to cultural values

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of the AMP will closely tie in with the impacts to the natural values of the Marine Park and range from moderate mid-term potential impacts to major long-term potential impacts.

Heritage values – There are no World, National or Commonwealth heritage listings that apply to the AMP. Two historic shipwrecks are located within the Marine Park. Impacts to shipwrecks are discussed under 'Cultural Heritage'.

Social and economic values – Tourism, commercial fishing, mining and recreation are important activities in the AMP. These activities contribute to the wellbeing of regional communities and the prosperity of the nation. Impacts to tourism and recreation within the AMP are discussed with regard to offshore and nearshore waters in the sections 'Tourism and Recreation'.

A worst-case hydrocarbon spill scenario has the potential to result in impacts to AMPs within the EMBA that range from moderate, medium-term to major, long-term, with the consequence severity dependent on the actual timing, duration and extent of a spill.

Key Ecological Features

The Ancient Coastline at 125 m Depth Contour KEF overlaps the Operational Area. The KEFs located within the EMBA and may be impacted by a worst case hydrocarbon spill are also Glomar Shoal, Continental Slope Demersal Fish Communities, Exmouth Plateau, Canyons Linking the Cuvier Abyssal Plan and the Cape Range Peninsula, Commonwealth Waters Adjacent to Ningaloo Reef, and Western Demersal Slope and Associated Fish Communities Of The Central Western Province. The proximity of the KEFs to the Operational Area are listed in Section 4.7 (described in Appendix C, Section 11).

The Ancient Coastline at the 125 m Depth Contour, Continental Slope Demersal Fish Communities, Exmouth Plateau and Canyons linking the Cuvier Abyssal Plane and the Cape Range Peninsula are KEFs primarily defined by seabed geomorphological features and have been classified as KEFs in recognition of the potential for increased biological productivity and, therefore, ecological significance. Potential impacts to these KEFs include the contamination of marine sediments, direct and indirect impacts to benthic fauna / habitats and associated impacts to demersal fish populations.

Notably, no features indicative of the Ancient Coastline have been identified within the portion of this KEF overlapping the Operational Area (as per Section 1.1). The other KEFs are also quite a significant distance from the Operational Area (approximately 27-693 km) and given the nature of the hydrocarbon, it is likely to be significantly weathered prior to reaching these receptors.

Glomar Shoal features marine primary producer habitat and site attached fishes and provides foraging habitat for a number of species, as discussed under the respective sections above. The Commonwealth waters adjacent to Ningaloo Reef are similarly important habitat for these animal groups. Contamination of marine sediments with hydrocarbons or impacted water quality from entrained and dissolved hydrocarbons may cause flow on effects within these ecosystems.

These KEFs cover extensive areas (as listed in Appendix C, Section 11) and should impacts to receptors within the KEFs (e.g. marine sediment, benthic communities) occur these would be anticipated to be short-lived, with no permanent impacts to the KEF.

Protected species

Cetaceans

A number of cetaceans were predicted to occur with the Operational Area and the EMBA (see Section 4.6.3). In the event of a loss of well containment; surface, entrained and dissolved hydrocarbons exceeding environmental impact threshold concentrations may drift across habitat for oceanic cetacean species and the migratory routes and/or BIAs of cetaceans considered to be MNES (e.g. humpback whale and pygmy blue whale north and southbound migrations).

Cetaceans that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling, ingestion of hydrocarbons (including from prey, water and sediments), aspiration of oily water or droplets and inhalation of toxic vapours (Deepwater Horizon Natural Resource Damage Assessment Trustees 2016). This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system, neurological damage (Helm et al. 2015), reproductive failure, adverse health effects (e.g. lung disease, poor body condition) and, potentially, mortality (Deepwater Horizon Natural Resource Damage Assessment Trustees 2016).

Given cetaceans maintain thick skin and blubber, external exposure to hydrocarbons is more likely to result in irritation to the more exposed skin and eyes. Entrained hydrocarbons may also be ingested, particularly by baleen whales which feed by filtering large volumes of water. Fresh hydrocarbons (i.e. typically in the vicinity of the release location) may have a higher potential to cause toxic effects when ingested, while weathered hydrocarbons are considered to be less likely to result in toxic effects.

Given the non-persistent nature of the hydrocarbons relevant to this EP (see Section 6.8.2.2 – Hydrocarbon Characteristics) and the relatively small floating hydrocarbon EMBA (see Figure 4-1), the area where potential impacts

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from inhalation and physical contact with surface slicks may occur would be localised around the release location. Impacts would most likely be expected to be limited to individuals that contact the slick, as discussed above.

In a review of the impacts of large-scale hydrocarbon spills on cetaceans, it was found that exposure to oil from the Deepwater Horizon resulted in increased mortality to cetaceans in the Gulf of Mexico (Deepwater Horizon Natural Resource Damage Assessment Trustees 2016), and long-term population level impacts to killer whales were linked to the Exxon Valdez tanker spill (Matkin et al. 2008). Given the nature of the condensate (compared with crude oil from these two spills) and relatively small nature of the surface slick, such exposure impacts to cetaceans may not eventuate.

Geraci (1988) has identified behavioural disturbance (i.e. avoiding spilled hydrocarbons) in some instances for several species of cetacean, suggesting that cetaceans have the ability to detect and avoid surface slicks. However, observations during spills have also recorded larger whales (both mysticetes and odontocetes) and smaller delphinids traveling through and feeding in oil slicks. During the Deepwater Horizon spill cetaceans were routinely seen swimming in surface slicks offshore (and nearshore) (Aichinger Dias et al. 2017).

Suitable habitat for oceanic toothed whales (e.g. sperm whales) and dolphins (e.g. long-snouted spinner dolphin) is broadly distributed throughout the NWMR and, as such, whilst these species may be present within the EMBA, impacts from a spill are unlikely to affect an entire population. Notably, there are no known aggregation areas or BIAs for dolphins or whales within the Operational Area.

Eastern Indian Ocean pygmy blue whales and humpback whales are known to migrate seasonally through the EMBA. Notably, the migration BIAs in the NWMR for both species do not overlap the Operational Area. A major spill event in June through to November would coincide with the humpback whale migration through the waters off the Pilbara, North West Cape and Shark Bay. A major spill in April to July or October to January would coincide with pygmy blue whale migration. Both the pygmy blue and humpback whales are baleen whales and are therefore most likely to be significantly impacted by toxic effects when feeding. However, feeding during migrations is typically low level and opportunistic, with most feeding for both species occurring in the Southern Ocean. Subsequently the risk of ingestion of hydrocarbons through feeding is low.

Migrations of both pygmy blue whales and humpback whales are protracted through time and space (i.e. the whole population will not be within the EMBA at any one time), and as such, a spill from a loss of well containment is not considered likely to affect an entire population.

Dugong

The EMBA overlaps a breeding, calving, foraging and nursing BIA for dugongs in Exmouth Gulf, approximately 222 km from the Operational Area. The dugong is known to inhabit protected shallow coastal areas and feed on seagrass in waters less than 10 m. The presence of the species in the EMBA is expected to be limited to infrequent occurrences of individuals or small groups. Entrained hydrocarbons above threshold concentrations are predicted to reach a number of receptor locations where dugongs may occur, including the following AMPs: Montebello MP (95%), Gascoyne MP (25%), Ningaloo MP (28%), and Argo-Rowley Terrace MP (4%).

Summary

A worst-case hydrocarbon spill scenario has the potential to result in moderate, medium-term impacts to offshore cetacean species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions.

Marine turtles

Five of the six marine turtle species were identified as potentially occurring within the EMBA, with BIAs and Habitat Critical areas identified within the EMBA (see Section 4.6.2).

Adult marine turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (National Oceanic and Atmospheric Administration 2010). Contact with surface slicks, or entrained hydrocarbon can therefore result in hydrocarbon adherence to body surfaces (Gagnon and Rawson 2010) causing irritation of mucous membranes in the nose, throat and eyes leading to inflammation and infection (National Oceanic and Atmospheric Administration 2010). Oiling can also irritate and injure skin, which is most evident on pliable areas such as the neck and flippers (Lutcavage et al. 1995). A stress response associated with this exposure pathway includes an increase in the production of white blood cells and even a short exposure to hydrocarbons may affect the functioning of their salt glands (Lutcavage et al. 1995).

Hydrocarbons in surface waters may also impact turtles when they surface to breathe and inhale toxic vapours. Their breathing pattern, involving large 'tidal' volumes and rapid inhalation before diving, results in direct exposure to petroleum vapours which are the most toxic component of the hydrocarbon spill (Milton and Lutz 2003). This can lead to lung damage and congestion, interstitial emphysema, inhalant pneumonia and neurological impairment (National Oceanic and Atmospheric Administration 2010).

Given the hydrocarbon is expected to weather rapidly when released to the environment, relatively fresh entrained hydrocarbons (which are typically relatively close to the release location) are considered to have the greatest potential

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for impact. Given the non-persistent nature of the hydrocarbons and the relatively small floating hydrocarbon EMBA, the area where potential impacts from inhalation may occur would be localised around the release location.

Due to the offshore location and water depths within the Operational Area, this area is unlikely to represent important habitat for marine turtles. It is, however, acknowledged that an internesting BIA for the flatback turtle associated with the Montebello Islands overlaps the Operational Area. Individuals may, therefore, be present within the Operational Area during their internesting period.

The EMBA also overlaps a number of BIAs and some habitat critical areas for marine turtles (see Section 4.6.2). Marine turtles are, therefore, likely to be present in the offshore waters of the EMBA, particularly as they are a migratory species which often travel large distances during migration periods. Important areas of aggregation for foraging, nesting and mating are typically associated with nearshore islands along the Pilbara and Gascoyne coastlines, as opposed to offshore waters.

Summary

In the event of a loss of well containment there is potential that surface, entrained and dissolved hydrocarbons exceeding environmental impact threshold concentrations will be present in offshore waters. Therefore, a hydrocarbon spill may disrupt a portion of marine turtle populations for the green, flatback, hawksbill, loggerhead and/or leatherback turtle. However, there is considered to be no threat to overall population viability given the non-persistent nature of predicted hydrocarbons.

Sea snakes

A number of sea snake species which are listed Marine under the EPBC Act were identified by the PMST as potentially occurring within the EMBA, including the critically endangered leaf-scaled sea snake and short-nosed sea snake which are known to occur within the EMBA.

Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles and may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (International Tanker Owners Pollution Federation 2011a). They may also be impacted when they return to the surface to breathe and inhale the toxic vapours associated with the hydrocarbons, resulting in damage to their respiratory system.

In general, sea snakes frequent the waters of the continental shelf area around offshore islands and potentially submerged shoals (water depths <100 m). It is acknowledged that sea snakes may be present in the Operational Area and within the EMBA. However, their abundance is not expected to be high in the offshore environment.

In summary, a hydrocarbon spill may have a minor disruption to some individuals in the offshore environment. Population level impacts to sea snake species are not, however, considered credible.

Sharks and rays

A number of sharks and ray species were identified as potentially occurring within the Operational Area and/or EMBA (see Section 4.6.1). Two foraging BIAs for the whale shark overlap with the EMBA; foraging (northward from Ningaloo along the 200 m isobath; Operational Area, EMBA) and foraging (high prey density - Ningaloo Marine Park; EMBA). Whale sharks are, therefore, likely to transit the open offshore waters within the EMBA whilst they migrate to and from Ningaloo Reef between July and November.

Other listed Threatened pelagic species identified in the PMST report as potentially occurring within the EMBA include the white shark, grey nurse shark, little gulper shark, dwarf sawfish, largetooth sawfish, green sawfish and scalloped hammerhead. There are no known areas of aggregation for these species in the offshore waters of the EMBA.

Impacts to sharks and rays may occur through direct contact with hydrocarbons and contaminate the tissues and internal organs either through direct contact or via the food chain (i.e. consumption of prey). As gill breathing organisms, sharks and rays may be vulnerable to toxic effects of dissolved hydrocarbons (entering the body via the gills) and entrained hydrocarbons (coating of the gills inhibiting gas exchange). In the offshore environment, it is probable that pelagic shark species, such as the whale shark, are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the affected areas.

Impacts to whale sharks from a hydrocarbon spill will depend on the timing of the spill, however; whale sharks as a pelagic species are expected to demonstrate avoidance behaviour and population level impacts are not anticipated.

Seabirds

A number of EPBC Act listed threatened and/or migratory seabird and shorebird species were identified by the PMST as potentially occurring within the Operational Area and/or EMBA. The wedge-tailed shearwater foraging (in high numbers) BIA overlaps the Operational Area.

Seabirds and migratory shorebirds are particularly vulnerable to contact with floating hydrocarbons, which may mat their feathers. This may lead to hypothermia from loss of insulation and ingestion of hydrocarbons when preening to remove hydrocarbons; both impacts may result in mortality (Hassan and Javed 2011). Notably, the credible loss of well containment scenarios result in a relatively small floating hydrocarbon EMBA which is centred around the release location. Subsequently, the potential for seabird exposure to floating hydrocarbons is considered to be low. Migratory shorebirds are considered unlikely to interact with spilled hydrocarbons as they are not expected to stop over within the offshore waters surrounding the Operational Area during their migrations between mainland/island areas. Many

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seabirds and migratory shorebirds forage over extensive areas (some hundreds of kilometres out to sea) so individuals may be present. Seabirds roosting or resting on the GWA platform is not common, however those that do may also be impacted, however, these would be individuals and not populations.

Seabirds which plunge dive to feed on prey may also contact entrained or dissolved hydrocarbons, most likely through ingestion of prey which are contaminated. Impacts to prey abundance as a result of hydrocarbons may also indirectly impact individuals.

There are several breeding BIAs for seabirds and migratory shorebirds that overlap with the EMBA, which are associated with breeding and nesting at locations along the Gascoyne and Pilbara coastlines (including near-shore islands). The outer edge of a breeding BIA for the wedge-tailed shearwater overlaps with the Operational Area, and another is less than a kilometre away. It is likely that individual birds may, therefore, transit the Operational Area. Other species' BIAs are at least 47 km away and these species are less likely to occur within the Operational Area.

Given the relatively low area of floating hydrocarbons and the lack of key aggregation areas for migratory shorebirds and seabirds within the Operational Area, impacts at the population level are not anticipated. Individual animals may, however, be impacted with potential fatalities occurring from oiling.

Nearshore waters (mainland and islands)

Marine sediment quality

Entrained and dissolved hydrocarbons (at or above the defined thresholds) are predicted to potentially contact shallow, nearshore waters of identified islands and mainland coastlines (see Table 6-33). Shoreline hydrocarbons may also reach the Muiron Islands and the associated MMA. Such hydrocarbon contact may lead to reduced marine sediment quality by several processes, such as adherence to sediment and deposition shores or seabed habitat.

Protected species

Cetaceans and dugongs

Coastal populations of small cetaceans (e.g. the spotted dolphin) and dugongs are known to reside or frequent nearshore waters along the WA coastline and nearshore islands, including the Ningaloo Coast and at the Muiron Islands, Montebello / Barrow / Group, and the Pilbara Southern Island Groups. These species may be impacted by entrained and dissolved hydrocarbons exceeding threshold concentrations (surface hydrocarbons were not modelled to reach these coastal waters) in the event of a loss of well containment.

The potential impacts of exposure from hydrocarbons are as discussed above. Nearshore populations of cetaceans and dugongs are known to exhibit site fidelity and are often resident populations. The potential impacts of exposure from hydrocarbons for cetaceans and dugongs are as discussed above. More specifically, nearshore populations of cetaceans and dugongs are known to exhibit site fidelity and are often resident populations. Therefore, avoidance behaviour may have greater impacts to population functioning. Notably, Geraci (1988) observed relatively little impacts beyond behavioural disturbance.

Humpback whale

The humpback whale resting area in the Exmouth Gulf lies just within the EMBA (due to modelled contact by entrained hydrocarbons at 100 ppb), however, it is about 218 km south-west of the Operational Area and the EMBA is not representative of any one hydrocarbon spill. The likelihood of impacts occurring within this BIA are, therefore, considered low.

Dugong

Impacts in addition to those noted above include ingestion of hydrocarbons by dugongs that feed on oiled seagrass and indirect impacts to dugongs should seagrass habitats be damaged by a hydrocarbon spill. The dugong calving BIA lies 222 km south-west of the Operational Area. As noted for the humpback whale resting BIA, the EMBA overlaps a small northern portion of the Exmouth Gulf and it is considered a low likelihood that the dugong BIAs (and associated seagrass meadows) located here and along the Ningaloo Coast (BIAs for calving, nursing, breeding and foraging) would be impacted by a hydrocarbon spill. No surface or shoreline hydrocarbons are predicted within the Exmouth Gulf or associated dugong BIAs within the EMBA.

Summary

A hydrocarbon spill may impact coastal cetaceans through site displacement and damage to food source, however, due to the non-persistent nature of the hydrocarbon it is not predicted to result in impacts on overall population viability of either dugongs or coastal cetaceans.

Marine turtles

Marine turtles are known to utilise nearshore waters and shorelines for foraging and breeding activities (including internesting), with significant nesting beaches along the WA mainland coast and nearshore islands in locations that may be impacted by a loss of well containment spill scenario (including the Muiron Islands, Montebello / Barrow Islands group and Pilbara Southern Islands Group).

The nearshore waters of these marine turtle habitat areas may be exposed to surface, entrained or dissolved hydrocarbons exceeding threshold concentrations.

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The potential impacts of exposure are as previously discussed. In the nearshore environment, turtles can ingest hydrocarbons when feeding and/or can be indirectly affected by loss of food source (e.g. seagrass due to dieback from hydrocarbon exposure) (Gagnon and Rawson 2010). In addition, hydrocarbon exposure can impact on turtles during the breeding season at nesting beaches. Contact with gravid adult females or with hatchlings may occur on nesting beaches (accumulated hydrocarbons) or in nearshore waters (entrained hydrocarbons) where hydrocarbons are predicted to make shoreline contact. Males waiting in nearshore areas to mate with adult females may also be impacted by entrained hydrocarbons.

Marine turtles aggregating near nesting beaches within the EMBA during the mating and nesting seasons are most vulnerable to hydrocarbons, due to greater turtle densities and the possible disruption to important life cycle behaviours. Potential impacts may occur at the population level due to the presence of a high number of breeding individuals and hatchlings (during hatchling dispersal) and may impact on overall population viability of marine turtle species. However, given the volatile nature of the hydrocarbons population level impacts are not anticipated to occur.

Sea snakes

Impacts to sea snakes for the mainland and island nearshore waters from direct contact with hydrocarbons may occur and may include potential damage to the dermis and irritation to mucous membranes of the eyes, nose and throat (ITOPF 2011a). Due to the time to impact in the nearshore environment, the hydrocarbons are considered to be weathered and less likely to result in toxic effects in comparison to fresh hydrocarbons (i.e. typically in the vicinity of the release location).

Therefore, a worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to sea snakes, with consequence severity dependent on the duration and extent of a spill in relation to the distribution of sea snakes.

Sharks and rays

Whale sharks and manta rays (reef manta ray and giant manta ray) are known to frequent Ningaloo Reef (forming feeding aggregations March through July) and the nearshore waters of the Muiron Islands (located 212 km south-south-west of the Operational Area). Whale sharks and manta rays generally transit along the nearshore coastline in these areas and are vulnerable to surface, entrained and dissolved aromatic hydrocarbon spill impacts, with both taxa having similar modes of feeding.

Whale sharks are versatile feeders, filtering large amounts of water over their gills, catching planktonic and nektonic organisms (Jarman and Wilson 2004). Whale sharks at Ningaloo Reef have been observed using two different feeding strategies, including passive sub-surface ram-feeding and active surface feeding (Taylor 2007). Passive feeding consists of swimming slowly at the surface with the mouth wide open. During active feeding, sharks swim high in the water with the upper part of the body above the surface with the mouth partially open (Taylor 2007). These feeding methods would result in the potential for individuals that are present in worse affected spill areas to ingest potentially toxic amounts of entrained or dissolved aromatic hydrocarbons into their body. Large amounts of ingested hydrocarbons may affect their endocrine and immune system in the longer term.

The presence of hydrocarbons may also cause displacement of whale sharks from important feeding and resting areas at Ningaloo Reef, potentially disrupt migration and aggregations to these areas in subsequent seasons. Whale sharks may also be affected indirectly by entrained or dissolved aromatic hydrocarbons through the contamination of their prey. The preferred food of whale sharks are planktonic organisms which are abundant in the coastal waters of Ningaloo Reef in late summer/autumn, driving the annual arrival and aggregation of whale sharks in this area. If a worse-case spill event were to occur during the spawning season, this important food supply (in worse spill affected areas of the reef) may be diminished or contaminated. The contamination of their food supply and the subsequent ingestion of this prey by the whale shark may also result in long term impacts as a result of bioaccumulation.

There is the potential for other coastal shark species (e.g. dwarf, narrow and/or green sawfish) to be impacted directly from hydrocarbon contact and/or indirectly through contaminated prey or loss of habitat. Excluding sawfish, which may exhibit high site fidelity, it is most likely that shark species (as mobile animals) will move away from spill affected areas and suffer minimal direct impact.

A spill reaching the Ningaloo coastline during key aggregation periods and impacting important whale shark foraging areas may have severe impacts to the local whale shark population, including possible mortality of individuals and impacts to life cycle habitats such as migration patterns. Most species of shark and ray (including whale sharks) are, however, expected to move away from spill affected areas with minimal impacts.

Seabirds

In the event of a loss of well containment, there is the potential for seabirds, and resident/non-breeding overwintering shorebirds that use the nearshore waters for foraging and resting, to be exposed to entrained and dissolved hydrocarbons. Impacts may include both lethal or sub-lethal effects, as discussed above and in more detail below.

Although breeding oceanic seabird species can travel long distances to forage in offshore waters, most breeding seabirds tend to forage in nearshore waters near to their breeding colony, resulting in intensive feeding by higher seabird densities in these areas during the breeding season and making these areas particularly sensitive in the event of a spill.

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Migratory shorebirds may be exposed to stranded hydrocarbon when foraging or resting in intertidal habitats, however, direct oiling is typically restricted to relatively small portion of birds, and such oiling is typically restricted to the birds' feet. Unlike seabirds, shorebird mortality due to hypothermia from matted feathers is relatively uncommon (Henkel et al. 2012). Indirect impacts, such as reduced prey availability, may occur (Henkel et al. 2012).

Notably, the nearest land mass to the Operational Area is the Montebello Islands, which is 38 km south and floating hydrocarbons at impact threshold is not predicted. There are also no known key foraging locations within or surrounding the Operational Area. It is considered unlikely, therefore, that animals nesting or breeding at near-shore islands or along the mainland would be impacted by surface hydrocarbons.

Impacts are more likely to occur through the ingestion of contaminated fish (nearshore waters) or invertebrates (intertidal foraging grounds such as beaches, mudflats and reefs) which have been exposed to entrained or dissolved hydrocarbons within the EMBA. Ingestion of contaminated prey can also lead to internal injury to sensitive membranes and organs (International Petroleum Industry Environmental Conservation Association 2004). Whether the toxicity of ingested hydrocarbons is lethal or sub-lethal will depend on the weathering stage and its inherent toxicity. Exposure to hydrocarbons may have longer term effects, with impacts to population numbers due to decline in reproductive performance and malformed eggs and chicks, affecting survivorship and loss of adult birds. Seabirds also typically nest above the high water mark, meaning nesting areas would not be expected to be directly impacted.

No shoreline contact at or above ecological threshold is predicted.

Submerged shoals and banks

Protected species

Marine turtles

Several submerged shoals and banks are located within the EMBA, including Rankin Bank, Glomar Shoal, Wilcox Shoal and Unnamed Shoal. The unnamed shoal is overlapped by the Operational Area. These shoals and banks may, at times, be foraging habitat for marine turtles, given the coral and filter feeding biota associated with these areas (see Appendix C, Section 7.2.1).

Notably, there are no known key aggregation areas (i.e. BIAs or habitat critical areas) associated with Glomar Shoal or Rankin Bank.

Impacts to marine turtles at submerged shoals and banks are as previously discussed above. Marine turtles would be expected to be foraging, resting and breathing at the surface at these geomorphic features. Ingestion of hydrocarbons whilst foraging through prey is also possible.

Marine turtles may be present at shoals and banks within the EMBA and, therefore, may be impacted by entrained and/or dissolved hydrocarbons present at concentrations greater than the relevant thresholds. Impacts would be expected to be limited to the individuals that may be transiting these areas. Subsequently, impacts at the population level are not anticipated for any of the five marine turtle species that may frequent shoals and banks within the EMBA.

Sea snakes

It is likely that sea snakes will be present at submerged shoals and banks, such as Unnamed Shoal, Wilcox Shoal, Rankin Bank and Glomar Shoal. No key areas of aggregation have been identified for sea snakes within the Operational Area or EMBA. Sea snakes may also be present at near-shore islands and reef areas.

The potential impacts of exposure to hydrocarbons are as discussed above.

Sea snake species in Australia generally show strong habitat preferences (Heatwole and Cogger 1993); species that have preferred habitats associated with submerged shoals and oceanic atolls may be disproportionately affected by a hydrocarbon spill affecting such habitat. However, population level impacts are not anticipated.

Sharks and rays

Pelagic sharks and rays may frequent submerged shoals and banks (such as Rankin Bank and Glomar Shoal) within the EMBA to feed. Some species may also exhibit site fidelity to these geomorphic features. There is the potential for resident shark and ray populations to be impacted directly from hydrocarbon contact or indirectly through contaminated prey or loss of habitat.

Spill modelling results indicated that entrained hydrocarbons may reach Rankin Bank (located 3.7 km from the Operational Area) within 7 hours of a worst-case spill event (i.e. within the first day), therefore there is the potential for sharks and rays at these features to be exposed to fresh unweathered hydrocarbons which may have potential for toxic impacts. Species which are resident to or exhibit site-fidelity to Rankin Bank may subsequently be severely impacted and/or displaced. Indirect impacts through ingestion of prey that has been exposed to hydrocarbons and/or the loss of marine flora habitats may also impact sharks and rays.

Wilcox Shoal and Unnamed Shoal are within or close to the Operational Area. There is a 87% and 94% (respectively) probability of entrained hydrocarbons making contact with these features, with time to exposure 23 hours at Wilcox Shoal and 30 hours at Unnamed Shoal. As with Rankin Bank, shark or ray species which are resident or exhibit site-fidelity to these shoals may be severely impacted and/or displaced.

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Glomar Shoal is a greater distance (51.5 km) from the Operational Area, and entrained hydrocarbons are not anticipated to reach this feature until over 600 hours after a spill event. Hydrocarbons will, therefore, be significantly more weathered and impacts to individuals much less severe.

Pelagic sharks and rays are expected to move away from areas affected by spilled hydrocarbons. Impacts to such species are expected to be limited to behavioural responses/displacement. Shark and ray species that have associations with submerged shoals and banks may or may not be displaced/exhibit behavioural avoidance in response to such habitat being contacted by spilled hydrocarbons. Such species may be more susceptible to a reduction in habitat quality resulting from a hydrocarbon spill. It is expected that there will be no impacts at the population level.

All settings

Coral reefs

Receptors

There are no coral reef habitats located within the Operational Area. Within the EMBA, coral reef habitats exist at Rankin Bank, Glomar Shoal, Muiron Islands, the Montebello and Barrow Island groups and numerous receptors associated with Ningaloo Reef, including the reef itself.

As discussed in 'Benthic Fauna', entrained and/or dissolved hydrocarbons are anticipated to reach banks and shoals including Unnamed Shoal, Wilcox Shoal, Rankin Bank and Glomar Shoal. Impacts to coral reef habitat at these features are anticipated to be similar in nature to benthic communities and of similarly low probability due to the water depths they exist at. However, potential biological impacts to sensitive corals could include sub-lethal stress and, in some instances, total or partial mortality of corals.

Hydrocarbons were modelled to reach Barrow Island (entrained); Barrow Island AMP and Marine Management Area (entrained and dissolved); and the Boodie, Double and Middle Islands Nature Reserves (entrained only). Entrained and dissolved hydrocarbons were also modelled to contact the Montebello AMP.

Entrained, dissolved and shoreline accumulation of hydrocarbons were predicted at the Muiron Islands, including the Marine Management Area. Shoreline accumulation was modelled to occur at small discrete locations of the islands. Spill modelling indicated the entrained and dissolved hydrocarbons would also reach the Ningaloo Reef, Commonwealth and State Ningaloo MPs, as well as the Ningaloo Coast World Heritage Area.

Impacts

Exposure to entrained hydrocarbons/dissolved aromatic hydrocarbons (≥100 ppb) has the potential to result in lethal or sub-lethal toxic effects to corals and other sensitive sessile benthos within the upper water column, including upper reef slopes (subtidal corals), reef flat (intertidal corals) and lagoonal (back reef) coral communities (with reference to Ningaloo Coast). Mortality in a number of coral species is possible, and this would result in the reduction of coral cover and change in the composition of coral communities. Sub-lethal effects to corals may include polyp retraction, changes in feeding, bleaching (loss of zooxanthellae), increased mucous production resulting in reduced growth rates and impaired reproduction (Negri and Heyward 2000).

This could result in impacts to the shallow water fringing coral communities/reefs of the offshore islands (e.g. Muiron Islands, Barrow and Montebello Island groups) and also the mainland coast (e.g. Ningaloo).

With reference to Ningaloo Reef, wave-induced water circulation flushes the lagoon and may promote removal of entrained and dissolved hydrocarbons from this particular reef habitat. Under typical conditions, breaking waves on the reef crest induce a rise in water level in the lagoon creating a pressure gradient that drives water in a strong outward flow through channels.

Shoreline Accumulation

As mentioned, no shoreline contact at ecological thresholds (100 g/m^2) was modelled.

Shallow coral habitats (i.e. nearshore and intertidal waters) are most vulnerable to hydrocarbons through coating by direct contact with surface slicks during periods when corals are tidally-exposed at spring low tides. Water soluble hydrocarbon fractions associated with surface slicks are known to cause high coral mortality (Shigenaka 2001) via direct physical contact of hydrocarbon droplets to sensitive coral species (such as the branching coral species).

There is, therefore, low potential for lethal impacts due to the physical hydrocarbon coating of sessile benthos (including by entrained hydrocarbons), with likely significant mortality of corals (adults, juveniles and established recruits) at the small spill affected areas. These impacts are particularly applicable to branching corals which are reported to be more sensitive than massive corals (Shigenaka 2001).

Recruitment / Spawning

In the unlikely event of a spill occurring at the time of coral spawning at potentially affected coral locations or in the general peak period of biological productivity, there is the potential for a significant reduction in successful fertilization and coral larval survival due to the sensitivity of coral early life stages to hydrocarbons (Negri and Heyward 2000). Such impacts are likely to result in the failure of recruitment and settlement of new population cohorts. In addition, some non-coral species may be affected via direct contact with entrained and dissolved aromatic hydrocarbons, resulting in sub-lethal impacts and in some cases mortality. This is with particular reference to the early life-stages of coral reef animals (reef attached fishes and reef invertebrates), which can be relatively sensitive to hydrocarbon

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exposure. Coral reef fish are site attached, have small home ranges and as reef residents they are at higher risk from hydrocarbon exposure than non-resident, more wide-ranging fish species. The exact impact on resident coral communities (which may include fringing reefs of the offshore islands and/or the Ningaloo reef system) will be entirely dependent on actual hydrocarbon concentration, duration of exposure and water depth of the affected communities. Coral community live cover, structure and composition may reduce in hydrocarbon impacted areas, manifested by loss of corals and associated sessile biota.

Recovery of impacted reef areas from a range of stressors typically relies on coral larvae from neighbouring coral communities that have either not been affected or only partially impacted. For example, there is evidence that Ningaloo Reef corals and fish are partly self-seeding (Underwood 2009) with the supply of larvae from locations within Ningaloo Reef of critical importance to the healthy maintenance of the coral communities. Recovery at other coral reef areas, may not be aided by a large supply of larvae from other reefs, with levels of recruits after a disturbance event only returning to previous levels after the numbers of reproductive corals had also recovered (Gilmour et al. 2013).

A hydrocarbon spill may result in large-scale impacts to coral reefs within the EMBA, particularly Ningaloo Reef and Muiron Islands, with long-term effects (recovery >10 years) likely.

Productivity

Primary production by plankton (supported by sporadic upwelling events in the offshore waters of the NWS) is an important component of the primary marine food web. Planktonic communities are generally mixed; including phytoplankton (cyanobacteria and other microalgae) and secondary consuming zooplankton, such as crustaceans (e.g. copepods), and the eggs and larvae of fish and invertebrates (meroplankton).

Plankton exposure to hydrocarbons in the water column can result in changes in species composition with declines or increases in one or more species or taxonomic groups (Batten et al. 1998). Phytoplankton may also experience decreased rates of photosynthesis (Tomajka 1985). For zooplankton, direct effects of contamination may include toxicity, suffocation, changes in behaviour, or environmental changes that make them more susceptible to predation.

Impacts on plankton communities are likely to occur in areas where entrained or dissolved aromatic hydrocarbon threshold concentrations are exceeded, but communities are expected to recover relatively quickly (within weeks or months). This is due to high population turnover with copious production within short generation times that also buffers the potential for long-term (i.e. years) population declines (International Tanker Owners Pollution Federation 2011a). Therefore, any impacts to exposed planktonic communities present within the EMBA are anticipated to be short-term.

Filter feeders

Hydrocarbon exposure to filter feeding communities (e.g. Montebello Islands) may occur, depending on the depth of the entrained and dissolved aromatic hydrocarbons. See discussion above on potential impacts.

Nearshore filter feeders that are present in shallower water <20 m may potentially be impacted by entrained hydrocarbon through lethal/sublethal effects (see discussion for Offshore Filter Feeders). However, due to the time to impact in the nearshore environment, the hydrocarbons are considered to be weathered and less likely to result in toxic effects in comparison to fresh hydrocarbons (i.e. typically in the vicinity of the release location). Such impacts may result in localised, long-term effects to community structure and habitat.

Seagrass beds, macroalgae and mangroves

Depending on the trajectory of the entrained and dissolved hydrocarbon plume, macroalgal / seagrass communities including those along the Ningaloo Coast (patchy and low cover associated with the shallow limestone lagoonal platforms), Muiron Islands (associated with limestone pavements), the Barrow and Montebello Island groups, the Pilbara Southern Island Group (documented as low and patchy cover) have the potential to be exposed.

Seagrass in the subtidal and intertidal zones have different degrees of tolerance to exposure of hydrocarbons. Subtidal seagrass is generally considered much less vulnerable to hydrocarbon spills than intertidal seagrass, primarily because freshly spilled hydrocarbons, including crude oil, float under most circumstances. Dean et al. (1998) found that hydrocarbons mainly affect flowering, therefore, species that are able to spread through apical meristem growth are not as affected (e.g. Zostera, Halodule and Halophila species).

Seagrass and macroalgal beds occurring in the intertidal and subtidal zone may be susceptible to impacts from entrained hydrocarbons. Toxicity effects can also occur due to absorption of soluble fractions of hydrocarbons into tissues (Runcie et al. 2010). The potential for toxicity effects of entrained hydrocarbons may be reduced by weathering processes that should serve to lower the content of soluble aromatic components before contact occurs.

Minimum time to contact for entrained hydrocarbons with the nearest receptor that may host seagrasses is 49 hours (Montebello Marine Park). As such, hydrocarbons released in the event of a loss of well containment are expected to be weathered prior to any credible contact with seagrasses. Exposure to entrained hydrocarbons may result in mortality, depending on actual entrained hydrocarbon concentration received and duration of exposure. Physical contact with entrained hydrocarbon droplets could cause sub-lethal stress, causing reduced growth rates and a reduction in tolerance to other stress factors (Zieman et al. 1984). Impacts on seagrass and macroalgal communities are likely to occur in areas where hydrocarbon threshold concentrations are exceeded.

As mentioned, mangrove habitat and associated mud flats and salt marsh at Ningaloo Coast and the Montebello Islands have the potential to be exposed to entrained hydrocarbons. Hydrocarbon coating of the prop roots of

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mangroves can occur when entrained hydrocarbons are deposited on the aerial roots. Hydrocarbons deposited on the aerial roots can block the pores used to breathe or interfere with the trees' salt balance, resulting in sub-lethal and potential lethal effects. Mangroves can also be impacted by entrained/dissolved hydrocarbons that may adhere to the sediment particles. In low energy environments, such as in mangroves, deposited sediment-bound hydrocarbons are unlikely to be removed naturally by wave action and may be deposited in layers by successive tides (National Oceanic and Atmospheric Administration 2014). Given the non-persistent nature of the hydrocarbons, however, no significant effects to mangrove habitat are expected to occur.

Entrained/dissolved hydrocarbon impacts may include sub-lethal stress and mortality to certain sensitive biota in these habitats, including infauna and epifauna. Larval and juvenile fish, and invertebrates that depend on these shallow subtidal and intertidal habitats as nursery areas, may be indirectly impacted due to the loss of habitats and/or lethal and sub-lethal in-water toxic effects. This may result in mortality or impairment of growth, survival and reproduction (Heintz et al. 2000). In addition, there is the potential for secondary impacts on shorebirds, fish, sea turtles, rays, and crustaceans that utilise these intertidal habitat areas for breeding, feeding and nursery habitat purposes.

Benthic fauna

In the event of a loss of well containment at the seabed, the spill modelling predicted hydrocarbon droplets would be entrained in a gas plume, transporting them through the water column and to the sea surface. As a result, the low sensitivity benthic communities associated with the unconsolidated, soft sediment habitat within the Operational Area are generally not expected to be exposed to released hydrocarbons. A localised area of impact relating to the hydrocarbon plume at the point of release is however predicted, which would result in a small area of seabed and any associated epifauna and infauna being exposed to hydrocarbons. Impacts to benthic communities within the Operational Area would subsequently be limited to the immediate area around the release site and may include lethal or sub-lethal impacts.

Within the offshore waters of the EMBA, impacts to benthic fauna on the seafloor are not anticipated as hydrocarbons are not expected to gravitate toward the seafloor (as described above). Geomorphic features located within the water column such as shoals and banks, however, may be impacted by dissolved and/or entrained hydrocarbons. Spill modelling indicates that Glomar Shoal, Rankin Bank, Unnamed Shoal and Wilcox Shoal, for example, would be contacted by entrained and/or dissolved hydrocarbons. These features support benthic communities that may be impacted by hydrocarbons. Minimum time to these receptors for entrained hydrocarbons for a subsea release is 23 hours (Wilcox Shoal). Entrained hydrocarbons reaching Wilcox Shoal within the first day may, therefore, present toxic impacts to benthic communities as they will not have had a chance to weather significantly. The worst-case modelling replicate indicated entrained hydrocarbon concentrations of 1,390 ppb at Wilcox Shoal.

Notably, given the depths of Rankin Glomar Shoal, Rankin Bank, Unnamed Shoal and Wilcox Shoal, the potential for impacts to benthic communities is considered to be significantly reduced given hydrocarbons will primarily feature in the upper water column.

Summary of potential consequences to socio-economic values	
Setting	***Receptor group***
All settings	**Cultural heritage** Entrained hydrocarbons above threshold concentrations are predicted to reach the Ningaloo Coast. It is acknowledged that this area contains numerous Indigenous sites such as burial grounds, middens and fish traps that provide a historical account of the early habitation of the area and a tangible part of the culture of local Indigenous groups. No shoreline contact was modelled for the Ningaloo Coast coastline and, therefore, no impacts to these sites is anticipated. The Ningaloo Coast is also designated a National, Commonwealth and World Heritage Feature. Impacts to the Ningaloo Coast have been discussed in the respective receptor sections above. Whilst there are no shipwrecks within or near to the Operational Area, there are a number of shipwrecks within the EMBA. Shipwrecks occurring in the subtidal zone will be exposed to entrained and dissolved hydrocarbons, and the marine life that shelter and take refuge in and around these wrecks may be affected by in-water toxicity of dispersed hydrocarbons. The consequences of such hydrocarbon exposure may include displacement of larger fish species (i.e. avoidance behaviours) and/or resident fish species and sessile benthos (such as hard corals) exhibiting sub-lethal and lethal impacts (which may range from physiological issues to mortality). For a detailed assessment of potential adverse cultural heritage, refer to Section 6.11.
Offshore waters	**Fisheries – commercial** A hydrocarbon release during a loss of well containment event has the potential to result in direct impacts to target species of three Commonwealth and 20 State fisheries active within the defined EMBA (refer Section 4.10.1). Lethal and sublethal effects may impact localised populations of targeted species

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	within the EMBA for entrained/dissolved hydrocarbons. However, entrained hydrocarbons are likely to be confined in the upper water column; therefore, demersal species are less likely to be exposed to hydrocarbons than pelagic species. A major loss of hydrocarbons from the Petroleum Activity may also lead to an exclusion of fishing from the spill-affected area for an extended period. Fish exposure to hydrocarbon can result in 'tainting' of their tissues. Even very low levels of hydrocarbons can impart a taint or 'off' flavour or smell in seafood. Tainting is reversible through the process of depuration which removes hydrocarbons from tissues by metabolic processes, although it is dependent upon the magnitude of the hydrocarbon contamination. Fish have a high capacity to metabolise these hydrocarbons while crustaceans (such as prawns) have a comparably reduced ability (Yender et al. 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential contamination of seafood can affect commercial and recreational fishers and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender et al. 2002). A major hydrocarbon spill would result in the establishment of an exclusion zone around the spill affected area. There would also be a temporary prohibition on fishing activities for a period of time. Subsequently, there is potential for economic impacts to the affected commercial fishing operators. Additionally, hydrocarbon can foul fishing equipment such as traps and trawl nets, requiring cleaning or replacement. The impact to fishers would be dependent on the extent of the spill and resulting exclusion zone and may cause economic impacts as a result of fishing bans, damaged equipment and/or consumer perception of seafood safety. These impacts would not be expected to be long term or affect the viability of the fishery.
	Tourism and recreation Recreational fishers predominantly target tropical species, such as emperor, snapper, grouper, mackerel, trevally and other game fish. Recreational angling activities include shore-based fishing, private boat and charter boat fishing, with the peak in activity between April and October (Smallwood et al. 2011). Limited recreational fishing takes place in the offshore waters of the Operational Area due to the distance from land mass, however; fishing may take place at nearby Rankin Bank and also at Glomar Shoal. Impacts on species that are recreationally fished are described above under 'commercial fisheries' and 'pelagic and demersal fish'. A worst-case spill may lead to the exclusion of marine nature-based tourist activities, resulting in a loss of revenue for tour operators. These impacts would not be expected to be long term.
	Offshore oil and gas infrastructure Surface hydrocarbons from a worst-case spill may affect production from existing offshore petroleum facilities (e.g. platforms and Floating production, storage, and offtake (FPSOs)). For example, facility water intakes for cooling and fire hydrants could be shut off which could in turn lead to the temporary cessation of production activities. Spill exclusion zones established to manage the spill could also prohibit activity support vessel access as well as tankers approaching facilities on the NWS. The impact on ongoing operations of regional production facilities would be determined by the nature and scale of the spill and the metocean conditions at the time. Furthermore, decisions on the operation of production facilities in the event of a spill would be based primarily on health and safety considerations. The closest oil and gas operation is the NRC platform (operated by Woodside). Other nearby facilities include the Chevron-operated Wheatstone platform and the Woodside-operated Pluto platform (Section 4.10.5). Operation of these facilities is likely to be affected in the event of a worst-case loss of well containment.

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Nearshore island and mainland coastal areas (nearshore waters)	**Fisheries – traditional** No designated traditional fisheries have been identified within the Operational Area or EMBA, it is recognised that Indigenous communities fish in the shallow coastal and nearshore waters including near Ningaloo Reef and therefore may be impacted if a worst-case hydrocarbon spill were to occur. Impacts would be similar to those identified for commercial fishing, in the form of a potential fishing exclusion zone and possible contamination/tainting of fish stocks.
	Tourism and recreation In the unlikely event of a major spill, the nearshore waters of the Ningaloo Coast (including the Ningaloo Coast Marine Park) could be reached by entrained and dissolved hydrocarbons, depending on the prevailing wind and current conditions. This location offers a number of amenities, such as fishing, swimming, snorkelling and other water-based activities, and utilisation of beaches and surrounds have a recreational value for local residents and visitors (regional, national and international). If a major spill resulted in hydrocarbon contact within the Ningaloo coastal area, there could be restricted access to beaches for a period of days to weeks, until natural weathering or tides and currents remove the hydrocarbons. Notably, shoreline contact at > 10 g/m^2 was modelled along the Ningaloo Coastline. In the event of a major spill, tourists and recreational users may also avoid areas due to perceived impacts, including after the hydrocarbon spill has dispersed. There is also the potential for stakeholder perception that this remote environment will be contaminated over a larger area and for the longer term resulting in a prolonged period of tourism decline. Oxford Economics (2010) assessed the duration of hydrocarbon spill related tourism impacts and found that on average, it took 12 to 28 months to return to baseline visitor spending. There is likely to be significant impacts to the tourism industry, wider service industry (hotels, restaurants and their supply chain) and local communities in terms of economic loss as a result of spill impacts to tourism. Recovery and return of tourism to pre-spill levels will depend on the size of the spill, effectiveness of the spill clean-up and change in any public misconceptions regarding the spill (Oxford Economics 2010). Other notable areas modelled to receive shoreline accumulation ≥ 10 g/m^2 include the Muiron Islands, Muiron Islands MMA, Southern Pilbara Islands, Exmouth coastline, Airlie Island, Ashburton Island, Barrow Island, Bessieres Island, Boodie Island, Direction Island, Middle Island, Montebello islands, Montebello Islands MP, Sunday Island and Thevenard Island. Impacts to these receptors would be as discussed above, although less significant due to the lower levels of tourism and recreation activities undertaken at these locations compared with the Ningaloo Coast.

MEE-01 well loss of containment – risk analysis
A bowtie risk analysis was undertaken to assess MEE-01. Refer to Figure 6-13, Figure 6-14, Figure 6-15 and Figure 6-16 for bowtie diagrams.

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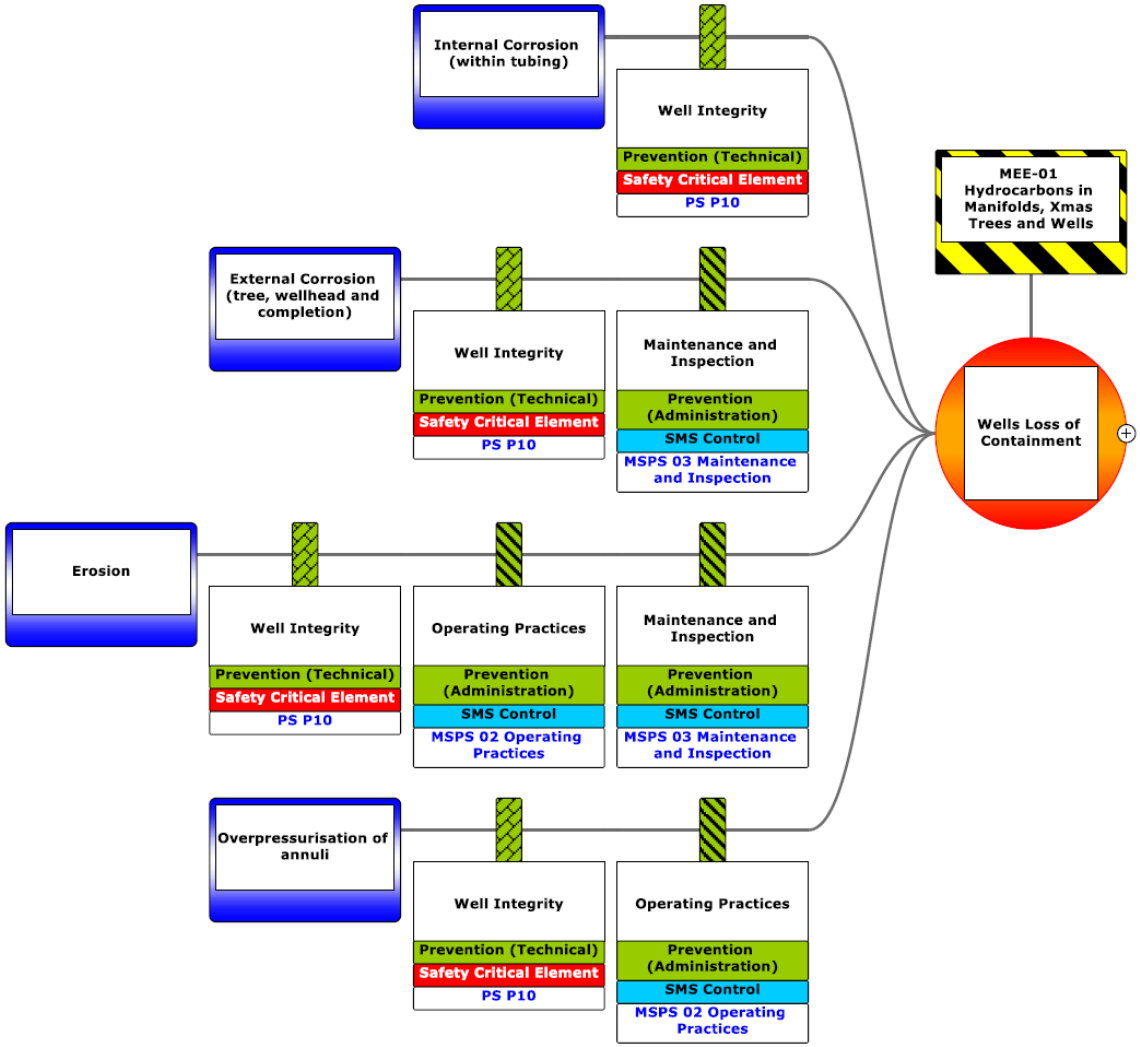


Figure 6-13: MEE-01 Wells Loss of Containment (Causes 1 – 4)

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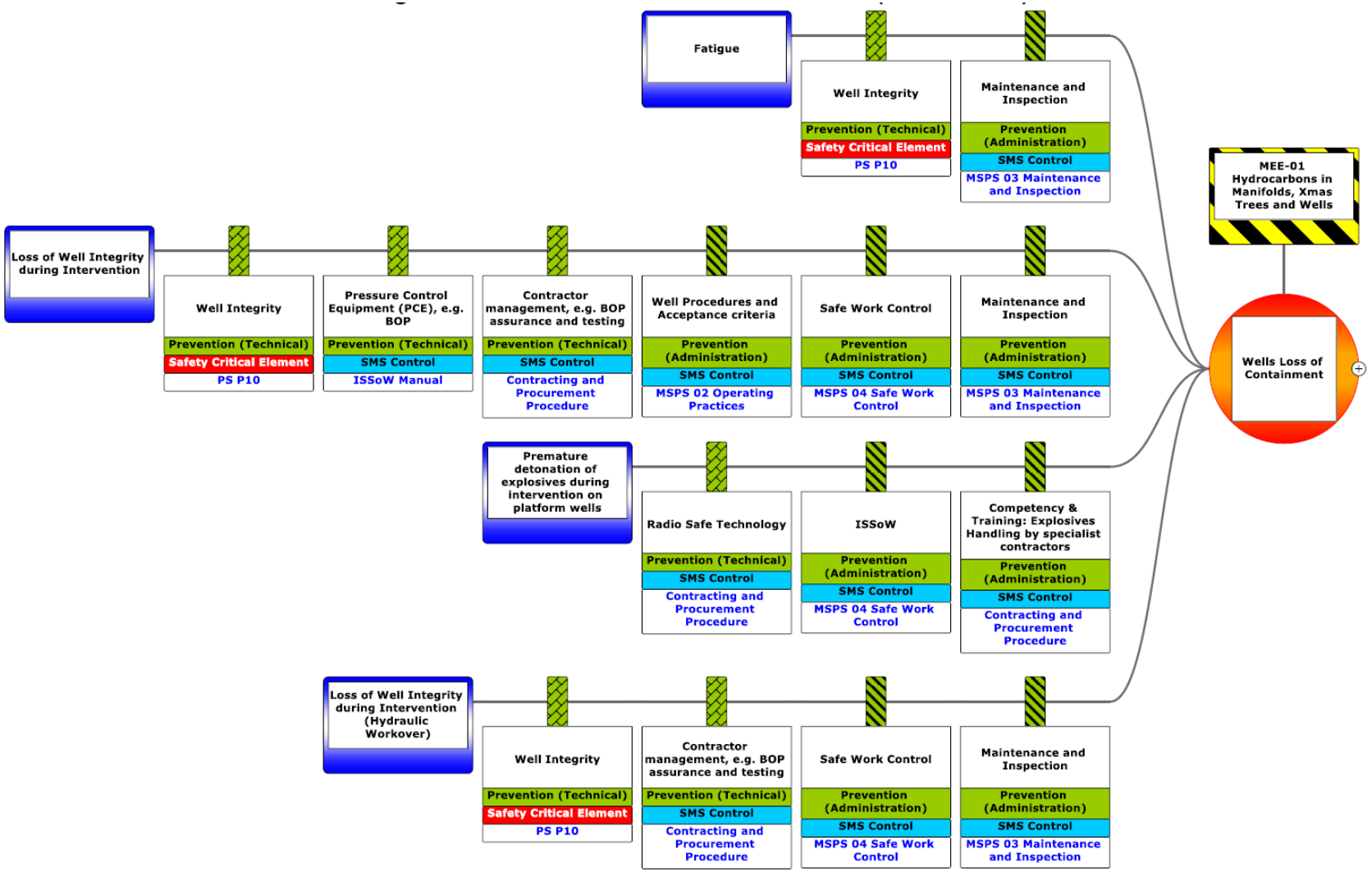


Figure 6-14: MEE-01 Wells Loss of Containment (Causes 5 – 8)

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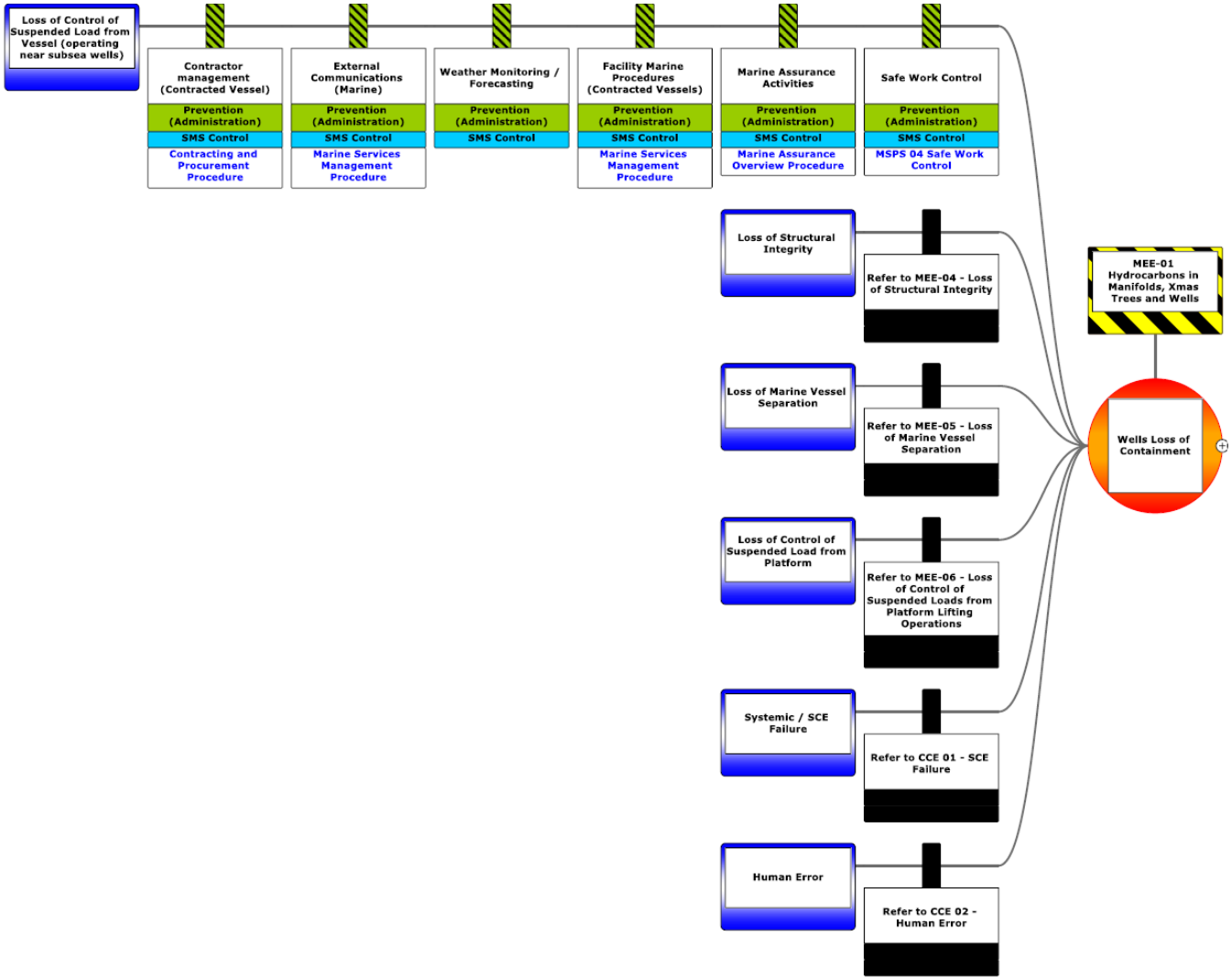


Figure 6-15: MEE-01 Wells Loss of Containment (Causes 9 – 13)

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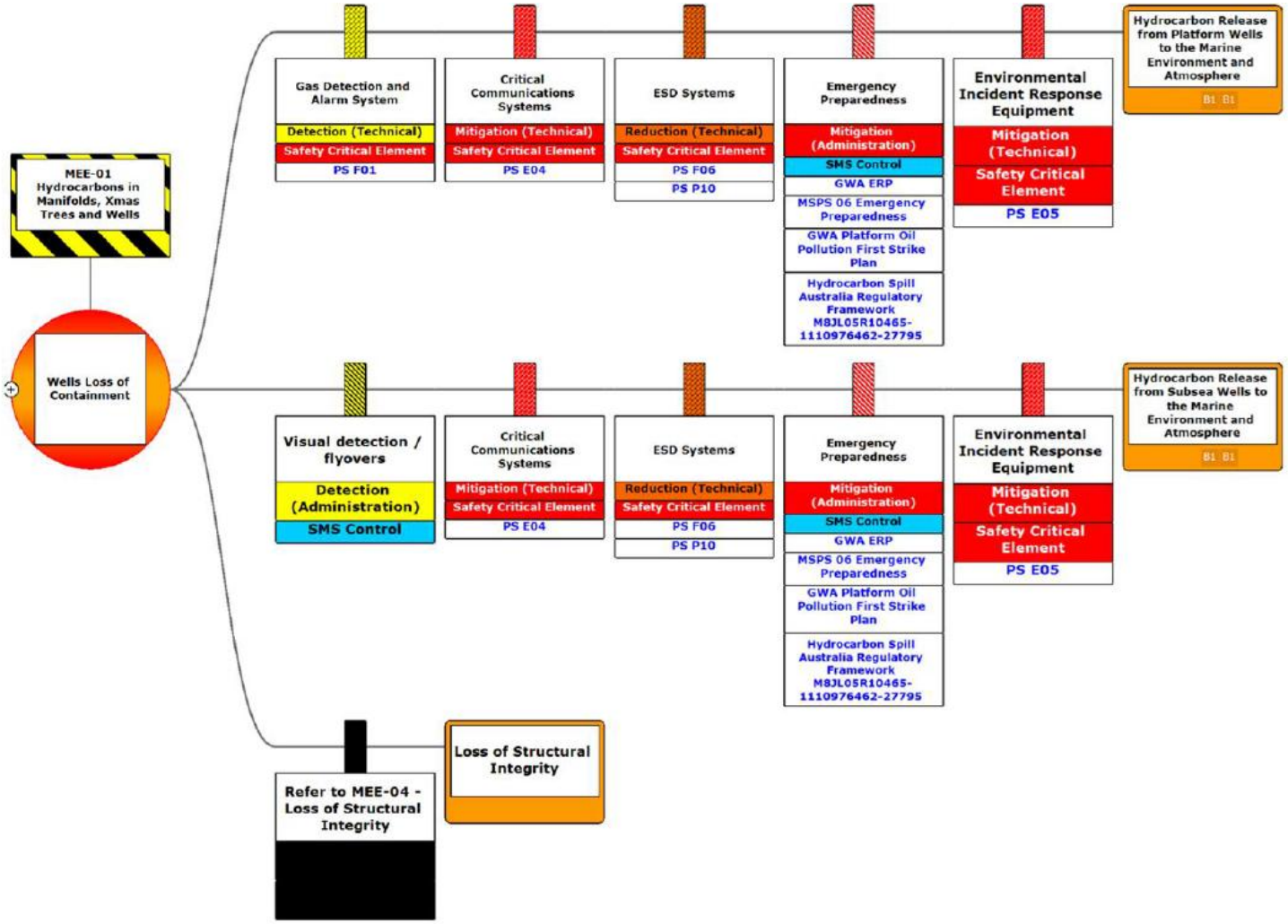


Figure 6-16: MEE-01 Wells Loss of Containment (Outcomes)

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MEE-01 loss of well containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
Preventative barriers – safety and environmental critical elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design		
Substitution				
Engineering controls	Maintaining well and hydrocarbon-containing infrastructure integrity to contain reservoir fluids within the well envelope to avoid a MEE.	P10 – Wells P09 – Pipeline Systems	Prevention (Technical)	Yes **C 13.1**
Mitigating barrier – safety and environmental critical elements				
Engineering controls	Maintaining availability of critical external and internal communication systems to facilitate prevention and response to accidents and emergencies.	E04 – Safety Critical Communication Systems	Mitigation (Technical)	Yes **C 13.2**
Engineering controls	Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards	F01 – Fire and Gas Detection and Alarm Systems	Detection (Technical)	Yes **C 13.3**
Engineering controls	Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE	F06 – Safety Instrumented System P10 – Wells	Reduction/ Control (Technical)	Yes **C 13.4**
Emergency response	Maintaining environmental incident response equipment to implement initial response to enact the Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan.	E05 – Environmental Incident Response Equipment	Mitigation (Technical)	Yes **C 13.5**

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MEE-01 loss of well containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
Legislation, codes and standards				
Procedures and administration	OPGGS (Resource Management and Administration) Regulations 2025: Accepted Well Operations Management Plan (WOMP) to demonstrate that the risks to well integrity are managed in accordance with sound engineering principles, standards, specifications, and good oilfield practice. It describes the systems in place to ensure well design and integrity is managed for the well lifecycle, thus contributing to management of associated potential environmental consequences of well integrity events.	GWA Well Operations Management Plan (WOMP)	Prevention/ Mitigation (Administration) Legislative requirements – must be adopted	Yes **C 13.6**
Procedures and administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility to; • identify hazards that have the potential to cause a MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with a MAE to ALARP; thus contributing to management of associated potential environmental	GWA Safety Case	Prevention / Mitigation (Administration) Legislative requirements – must be adopted	Yes **C 13.7**

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MEE-01 loss of well containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
	consequences of MAEs.			
Management system specific measures: key standards or procedures				
Procedures and administration	Implement management systems to maintain: • M02 Operating Practices • M03 Maintenance and Inspections • M04 Safe Work Control • Management of Change – Assets Procedure (Temporary Equipment) • Marine Operations Standard • Marine Assurance Standard • Contracting and Procurement Procedure	MSPS-02 Operating Practices MSPS-03 Maintenance and Inspections MSPS-04 Safe Work Control Marine Operations Standard Marine Assurance Standard Contracting and Procurement Procedure	Prevention (Administration)	Yes – See Section 7.2.9
Procedures and administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**
Emergency response and contingency planning	Implementing management systems to maintain: • M06 – Emergency Preparedness • GWA Emergency Response Plan • Well Intervention Programme ESD Procedure • Goodwyn Alpha (GWA) Facility Operations – Oil	MSPS M06 – Emergency preparedness GWA Emergency Response Plan GWA ERP Well Intervention Programme ESD Procedure Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan	Mitigation (Administration)	Yes- See Section 7.2.9 Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.

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MEE-01 loss of well containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
	Pollution First Strike Plan • Hydrocarbon Spill Australia Regulatory Framework[93]	Hydrocarbon Spill Australia Regulatory Framework		

Risk based analysis

For risks identified as MEEs, a more detailed risk-based bowtie analysis (as outlined in Section 2.5.3) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and considers independence of each barrier and their type of effect in controlling the hazardous event.

Application of Woodside's Risk Management Procedures and implementation of the WOMP ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the SCE Technical Performance Standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability
- wells integrity codes and standards.

For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Technical Performance Standards which also include the relevant assurance tasks (e.g. inspection, maintenance, testing and monitoring requirements) to ensure technical integrity.

Bowtie analysis was undertaken to assess MEE-01. Refer to Figure 6-13, Figure 6-14, Figure 6-15 and Figure 6-16 for bowtie diagrams.

A quantitative spill risk assessment was undertaken (refer Section 6.8.2 for details of the method used).

Company values

Corporate values require all personnel at Woodside to comply with appropriate policies, standards, procedures and processes while being accountable for their actions and holding others to account in line with Our Values. As detailed above, the Petroleum Activity will be undertaken in line with these policies, standards and procedures that include suitable controls to prevent loss of well containment, and response should a loss of well containment occur.

Societal values

Due to the proximity to sensitive receptors (e.g. Rankin Bank) and the potential extent of the EMBA, the loss of well containment risk rating presents a Decision Type B in accordance with the decision support framework described in Section 2.4.4. Extensive consultation was undertaken for this program to identify the views and concerns of relevant stakeholders, as described in Section 5.

Woodside has sent a Consultation Information Sheet to all identified relevant stakeholders regarding the Petroleum Activity (Section 5 and Appendix F). Woodside has consulted with WA Department of Transport and Major Infrastructure (DTMI) on spill response strategies.

ALARP statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood unplanned hydrocarbon release as a result of a loss of well containment.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of well integrity and ensuring the wells are operated within their design envelope through operating practices and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

[93] In accordance with Regulation 56 of the Environmental Regulations, references to the Hydrocarbon Spill Australia Regulatory Framework within this document refer to the version submitted with accepted North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website at: https://docs.nopsema.gov.au/A1282743.

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MEE-01 loss of well containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect***	***Control adopted***
The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the WOMP, SCE management procedures including performance standards for SCEs, and Management System Performance Standards (MSPSs) for Safety Critical Management System Controls. The application of Woodside Risk Management Procedures and implementation of the WOMP ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • ongoing hazard identification, risk assessment and the identification of control measures • ongoing integrity management of hardware control measures in accordance with the technical performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability • well integrity codes and standards. Well intervention activities are carried out to address maintenance issues with the wells but offer the potential for Loss of Containment from the wells. These activities are carried out using equipment specific to the task by specialist personnel under the Safe Work Control MSPS. Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of well intervention activities, it is considered that MEE risk associated with wells loss of containment at the GWA platform and at subsea wells are managed to ALARP.				

MEE-01 loss of well containment – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The consequence assessment has considered the relevant principles of ESD: • The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • The principle of inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) ***External Context*** Woodside has considered feedback from relevant persons during the consequence assessment (Section 5). Woodside has consulted with AMSA Marine Pollution and DTMI. A copy of the Oil Pollution First Strike Plan was provided to DTMI.	The predicted level of risk to ecosystems, species, habitat or physical or biological attributes from a loss of well containment is considered to be of an acceptable level (consequence level, M - Moderate), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been considered, where appropriate • legislative requirements and industry standards have been adopted, as applicable • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant WHPs, AMPs, recovery plans • the predicted level of risk has been reduced to ALARP. ***Environmental performance consideration*** To manage a loss of well containment to ecosystems, species, habitat or physical or biological attributes to an acceptable level the following EPO has been applied: **EPO 13:** No release of hydrocarbons to the marine environment due to well loss of containment. The adopted controls are considered appropriate to manage the risks of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

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MEE-01 loss of well containment – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Other relevant persons were consulted (Section 5) and their feedback incorporated into this EP where appropriate. ***Other Requirements*** The EMBA overlaps BIAs for threatened and migratory species, as well as State and Commonwealth marine protected areas. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. As demonstrated in Section 6.10, the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans.	

EPOs, EPSs and MCs			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
EPO 13 No release of hydrocarbons to the marine environment due to well loss of containment.	**C 13.1** Maintaining well and hydrocarbon-containing infrastructure integrity to contain reservoir fluids within the well envelope to avoid a MEE.	**PS 13.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P10 – Wells, to: o ensure a well retains the mechanical integrity to contain reservoir fluids within the well envelope at all times to avoid a MEE; including operate phase environmentally critical equipment for pressure containment, structures, monitoring and isolating systems associated with the well. • P09 – Pipeline Systems, to; o detect and support response (alarms and autonomous trips) to significant sand production for applicable systems to ensure the integrity of pressure equipment is not compromised.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.2 Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	**PS 13.2** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • E04 – Safety Critical Communication Systems to allow effective Emergency Response (ER) communications in emergencies, including: o internal communications such as audible and visual warning systems, and voice communications during emergency events o external communications such as voice communications to adjacent	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
		facilities, aircraft and vessels, and external incident control centres during emergency events.	
	C 13.3 Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	**PS 13.3** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F01 – Fire and Gas Detection and Alarm Systems to; ○ continuously monitor and alert for fire events and significant gas accumulations, initiate actions to minimise event escalation, and support Emergency Response by providing status of situation.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.4 Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE.	**PS 13.4** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System • P10 – Wells, ○ to together detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment and wells in a safe condition to prevent or mitigate the effects of a MEE.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.5 Maintaining environmental incident response equipment to implement initial response to enact the GWA Facility Operations – Oil Pollution First Strike Plan.	**PS 13.5** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • E05 – Environmental incident response equipment, including: ○ satellite tracking drifter buoy able to monitor spill movement ○ sufficient hydrocarbon spill response equipment for control and/or clean-up of liquid hydrocarbon spills to ocean ○ minimum equipment coverage, to maintain adequate spill response capability.	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
	C 13.6 OPGGS (Resource Management and Administration) Regulations 2025: Accepted WOMP.	**PS 13.6** An accepted WOMP is implemented, and well integrity notification and reporting are undertaken in accordance with the Regulations (as applicable).	**MC 13.6.1** Acceptance letter from NOPSEMA demonstrates acceptance of the WOMP. Records demonstrate applicable NOPSEMA notification and reporting.
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** An accepted Safety Case is implemented, and safety notification and reporting is undertaken in accordance with the Regulations (as applicable).	**MC 13.7.1** Acceptance letter from NOPSEMA demonstrates acceptance of the Safety Case. Records demonstrate applicable NOPSEMA notification and reporting.
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Incident reports raised for unplanned releases; and Recordable Incidents notified.	**MC 13.8.1** Records demonstrate incident reports raised for unplanned releases, and applicable Recordable Incident notifications completed.
Mitigation – hydrocarbon spill response	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.		

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6.8.4 Unplanned hydrocarbon release: subsea equipment loss of containment (MEE-02)

Context		
Facility layout and description – Section 3.5 Subsea infrastructure – Section 3.5.2 Subsea IMMR activities – Section 3.7	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key ecological features – Section 4.7 Protected places – Section 4.8 Socio-economic – Section 4.10	Stakeholder consultation – Section 5

Risks evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems / habitat	Species	Socio-economic	Decision type	Consequence	Likelihood	Risk rating	ALARP tool	Acceptability	Outcome
Release of hydrocarbons resulting from loss of containment of subsea flowlines and infrastructure (PoG, GWF1, GWF2, GWF3, GWF4 and two future tie-in production wells).	✓	✓	✓	✓	✓	✓	B	C	0	M	LCS RBA CV SV	Acceptable, If ALARP	EPO 14
Release of hydrocarbons resulting from loss of export pipeline containment (IFL, including 2TL inventory).	✓	✓	✓	✓	✓	✓		B	1				

Description of source of risk

The GWA platform is connected to the following infrastructure:

- NRC via a 23 km, 30” IFL from the GWA RESDV, through the GWA SSIV, tying into the IFL / 2TL tie-in tee. There is no fail-closed or actuated isolation between the GWA IFL and the 2TL
- PoG wells via the 24.2 km, 16” PoG pipeline with the PoG SSIV located approximately 75 m from the GWA platform and connection to the PoG riser
- GWF1 infrastructure via the 16.3 km, 16” GWF1 pipeline with the GWF1 SSIV located approximately 80 m from the GWA platform and connected to the GWF1 riser
  - GWF3 wells are tied back via the existing GDA manifold and GWF1 pipeline system
  - GWF4 infrastructure is planned to include:
  - TPA04, tied back via the existing GWF1 infrastructure;
  - YOD05 and ESA01, tied back via the KDA manifold and GWF2 pipeline system; and
  - WCA01 and WCA02, tied back via the Wilcox manifold and Wilcox flowline to the GWF2 pipeline system.
  - Two future tie-in production wells may be tied back via the existing GWF1 infrastructure
- GWF2 wells via the ~15 km, 16” GWF2 pipeline, which ties into the GWF1 pipeline at the GWF1 SSIV assembly
- Echo/Yodel (EY) infrastructure connected via the KDA manifold and GWF2 pipeline system. The EY pipeline is currently suspended, filled with treated seawater and isolated from topsides process equipment and suspended

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wells. Treated seawater does not present a MEE risk and, as such, EY is not considered further in this assessment.

A subsea loss of containment of these components may result in the release of large volumes of hydrocarbon inventory. Due to the potential consequence of a worst-case subsea loss of containment, this risk is considered to be a MEE (MEE-02), with the exception of a loss of containment from PoG pipeline; the consequence of this scenario was not considered to be a MEE.

The pipeline, flowline and riser design include a range of measures that specifically aid in minimising the risk of external damage. These include:

- material selection for strength and corrosion resistant properties
- subsea and surface valves to isolate pipelines from the facility and vice versa
- subsea shutdown system closes on loss of hydraulic pressure
- construction and installation techniques such as stabilisation and self-burial
- design of subsea equipment which takes into consideration snag potential and, where practicable, is snag resistant
- installation of flowline LP alarms (set above minimum operating pressure)
- flowline specifications upgraded in line with changing technologies.

The potential hazard sources that could instigate a loss of containment from the GWA pipelines and risers are:

- anchor impacts/dragging
- vessel impacts
- pipeline stability and free spans
- pipeline assembly and fittings
- internal or external corrosion
- erosion (for flowlines PoG, GWF1 and GWF2)
- operational activities
- overpressure
- exceedance of design temperature (for IFL)
- equipment fatigue (risers and structural supports)
- design and other defects
- human management/error.

Escalation from other MEEs can cause pipeline and riser loss of containment:

- loss of structural integrity (MEE-04) (Section 6.8.6)
- loss of marine vessel separation (MEE-05) (Section 6.8.7)
- loss of control of suspended load from facility lifting operations (MEE-06) (Section 6.8.8).

Although anchor impact and dragging are potential hazard sources, the risk of pipeline loss of containment as a result of commercial trawling practice is not considered credible to result in pipeline loss of containment, given structural protection frames are in place for key subsea infrastructure (e.g. manifolds) according to design risk based analysis. Notably, the Operational Area is located outside of the North-west Slope Trawl Fishery and the Western Deepwater Trawl Fishery fishery areas (demersal trawl fishing areas within proximity of the NWS). Whilst the Operational Area overlaps the Pilbara Trawl Interim Managed Fishery, this portion of the fishery is closed to trawling.

Maintenance of subsea infrastructure structural protection frames are included in mechanical integrity controls set out for pipeline integrity performance standard P09-Pipeline System.

A number of common failure causes due to human error and Safety Critical Equipment (SCE) failures are presented in the generic Human Error and SCE failure bowties in Section 6.8.9.

Subsea loss of containment – credible scenarios

Three credible worst-case subsea loss of containment scenarios were identified:

- scenario 3 - Flowlines (GWF1 / GWF2 / GWF3 / GWF4) subsea release outboard of SSIV
- scenario 4 - Subsea release from IFL (including 2TL inventory) downstream of SSIV but within 500 m of GWA facility
- scenario 5 - Surface release from IFL (including 2TL inventory) from rupture of riser at GWA facility.

Scenario 3 was recently re-assessed to incorporate the addition of the Wilcox flowline. Three rupture locations have been initially considered: (1) GWF2 flowline inlet (at D/S of LPA manifold), to be consistent with previous GWF1/2/3 LoC Study; (2) Lowest point at Wilcox flowline; (3) Downstream of SSIV. Location (1) was identified to carry the highest volume of condensate released and is therefore used as the worst-case credible scenario for Scenario 3.

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The small condensate inventory associated with PoG means it is not considered to present a MEE. Similarly, inventories contained downstream of flowline SSIVs and upstream of the IFL SSIV located on the mudmat are small and as such are unlikely to present MEEs.

Each worst-case scenario assumes the subsea loss of the entire hydrocarbon inventory of the pipework; no additional supply of hydrocarbons to the compromised infrastructure is assumed (i.e. assumed that the Safety Instrumented System has functioned). The release location for Scenario 3 was based on the closest proximity to a sensitive receptor (Rankin Bank); this location is the western end of the GWF2 pipeline (at the LPA PLET). The release location for Scenarios 4 and 5 is the GWA platform. This location was considered to be the most likely for a subsea loss of containment of the IFL (due to loss of suspended load, refer to Section 6.8.8) and the release volume would be larger than a release from GWF3 infrastructure, due to the GWF3 wells tying into an existing GDA manifold.

The subsea loss of containment scenarios parameters are summarised in Table 6-31.

Table 6-31: Summary of worst-case subsea loss of containment hydrocarbon release scenarios

Scenario	Hydrocarbon	Duration (hrs)	Depth (m)	Latitude (D°M'S'' S)	Longitude (D°M'S'' E)	Total release volume (m^3)
Scenario 3 - flowlines (GWF1 / GWF2) subsea release outboard of SSIV	GWF4 rich fluid composition (GWF Condensate)	< 6 hrs	78	19° 49' 42"	115° 39' 30"	799.7
Scenario 4 - subsea release from IFL (including 2TL inventory) downstream of SSIV but within 500 m of the GWA platform	GWA condensate	< 6 hrs	131	19° 39' 8"	115° 55' 46"	8,090
Scenario 5 - surface release from IFL (including 2TL inventory) from rupture of riser at the GWA platform	GWA condensate	< 6 hrs	Surface	19° 39' 8"	115° 55' 46"	7,623

Decision type, risk analysis and ALARP tools

Woodside implements industry standard practice in subsea system design and construction. In the company's recent history, it has not experienced any subsea integrity events that have resulted in significant environmental impacts. The GWA facility has never experienced a worst-case subsea loss of containment event.

Decision type

A decision type 'B' has been applied to this risk under the Guidance on Risk Related Decision Making (OEUK 2025). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the bowtie methodology (described in Section 2.5.3) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and stakeholder consultation.

The release of hydrocarbons as a result of subsea loss of containment is considered a Major Environment Event (MEE-02). The hazard associated with this MEE is hydrocarbons in subsea infrastructure (pipelines, flowlines, manifolds etc.) tied to or originating from the GWA platform.

Quantitative spill risk assessment

Spill modelling of each of the subsea loss of containment credible spill scenarios was undertaken by RPS to determine the fate of hydrocarbon released in each scenario based on the assumptions in Table 6-31. Modelling was undertaken over all seasons to address year-round operations. This provides a conservative representation of the EMBA and the environmental risks from the identified worst-case credible release volumes for all subsea loss containment scenarios.

Hydrocarbon characteristics

GWA condensate blend has been used for the modelling of Scenarios 4 and 5 and GWF4 rich fluid composition (GWF Condensate) for Scenario 3, as these hydrocarbons are considered representative of potential hydrocarbons present within each scenario. Refer to Section 6.8.2.2 for a description of the hydrocarbon characteristics.

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Subsea plume dynamics

The subsea loss of containment scenarios (Scenarios 3 and 4) would result in a buoyant plume of hydrocarbons, which has been modelled using the OILMAP-Deep numerical model (summarised in Table 6-32).

Table 6-32: Inputs and outputs for OILMAP-Deep model for Scenarios 3 and 4

	Parameter	Scenario 3	Scenario 4
Inputs	Release depth (m below sea level)	78.0	131.0
	Oil density (g/cm^3) (at 15°C)	0.769	0.738
	Oil viscosity (cP) (at 15°C)	1.030	0.529
	Oil temperature (°C)	40	25
	Gas:Oil ratio (m^3/m^3) [scf/barrel]	1,580 [8,873] (first 15 mins)	6,066 [34,055]
	Oil flow rate (m^3/d)	869 [5,466] (first 15 mins)	2,191 [13,781]
	Hole diameter (m) [in]	0.350 [13.763]	0.723 [28.472]
Outputs	Plume diameter (m)	10.1	16.9
	Plume height (m above sea level)	78.0 (Surface)	131.0 (Surface)
	Plume initial rise velocity (m/s)	23.9	19.8
	Plume terminal rise velocity (m/s)	19.5	16.1
Predicted oil droplet size distribution	21.4% droplets of size (µm)	9.88	5.9
	31.1% droplets of size (µm)	14.43	11.9
	24.7% droplets of size (µm)	18.76	17.8
	15.1% droplets of size (µm)	24.38	23.8
	7.7% droplets of size (µm)	35.61	29.7

Likelihood

In accordance with the Woodside Risk Matrix, given prevention and mitigation measures in place (i.e. design, inspection and maintenance, pipeline marked on marine charts), the likelihood has been determined to be 1 (Highly Unlikely). The likelihood of release due to dropped object impact is also determined as 0 (Remote) because the flowlines outboard of the SSIVs are outside the drop range for lifting activities taking place on the platform.

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon were considered during the risk assessment for a worst-case subsea or riser loss of containment. These considerations were informed primarily by the outputs from the numerical modelling study, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (Section 6.8.2) and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence assessment

Environment that may be affected

Scenario 3 - flowlines (GWF1 / GWF2) subsea release outboard of SSIV

Surface hydrocarbons (impact threshold – 10 g/m^2)

Hydrocarbon spill modelling for floating hydrocarbons indicated that concentrations equal to or greater than the 10 g/m^2 ecological threshold could potentially be found, up to approximately 24 km (north-east) from the release location. The only receptor predicted to be contacted by floating hydrocarbons at ecological thresholds is Rankin Bank (4%) with the minimum time to contact of 2 hours.

Entrained hydrocarbons (impact threshold – 1000 ppb)

Entrained oil concentrations equal to or greater than the 1000 ppb threshold are predicted to be found approximately 75 km south-west from the release location. Receptors with the highest probability of contact above 1000 ppb include Montebello AMP (3.5%). The worst-case entrained oil concentration calculated was 7,116 ppb for Rankin Bank.

Dissolved hydrocarbons (Impact threshold – 10 ppb)

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 10 ppb threshold are predicted to be found up to approximately 443 km south-west from the release location. The worst-case concentration calculated is

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2,544 ppb at Rankin Bank. Cross-section plots calculated from the stochastic modelling indicate that dissolved aromatic hydrocarbon concentrations ≥ 10 ppb would tend to extend over the upper 45 m water depth.

Accumulated hydrocarbons (shoreline oil) (Impact threshold – 100 g/m^2)

No receptors were predicted to receive shoreline hydrocarbons above the 100 g/m^2 threshold.

Scenario 4 - subsea release from IFL (including 2TL inventory) downstream of SSIV but within 500 m of GWA facility

Surface hydrocarbons (Impact threshold – 10 g/m^2)

Hydrocarbon spill modelling for floating hydrocarbons indicated that no floating hydrocarbons at ecological threshold are predicted.

Entrained hydrocarbons (Impact threshold – 1,000 ppb)

Entrained oil concentrations equal to or greater than the 1,000 ppb threshold are predicted to be found approximately 422 km south-east from the release location. Receptors with the highest probability of contact at the ecological threshold (1,000 ppb) include Rankin Bank (12.5%) and Montebello AMP (1.5%).

Dissolved hydrocarbons (Impact threshold – 10 ppb)

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 10 ppb threshold are predicted to be found up to approximately 910 km south-east from the release location. The maximum dissolved aromatic hydrocarbon concentration forecast for any receptor is predicted as 821 ppb at Rankin Bank.

Accumulated hydrocarbons (shoreline oil) (Impact threshold – 100 g/m^2)

No receptors were predicted to receive shoreline hydrocarbons above the 100 g/m^2 threshold.

Scenario 5 - Surface release from IFL (including 2TL inventory) from rupture of riser at GWA facility.

Surface hydrocarbons (Impact threshold – 10 g/m^2)

Hydrocarbon spill modelling for floating hydrocarbons indicated that concentrations equal to or greater than the 10 g/m^2 ecological threshold could potentially be found, up to approximately 29 km (south-east) from the release location. No contact with receptors is predicted.

Entrained hydrocarbons (Impact threshold – 1000 ppb)

Entrained oil concentrations equal to or greater than the 1000 ppb threshold are predicted to be found approximately 111 km south-east from the release location. There was no contact with receptors predicted above a probability of 1%.

Dissolved hydrocarbons (Impact threshold – 10 ppb)

Dissolved aromatic hydrocarbon concentrations equal to or greater than the 10 ppb threshold are predicted to be found up to approximately 693 km south-west from the release location. The maximum dissolved aromatic hydrocarbon concentration forecast for any receptor is predicted as 257 ppb at Rankin Bank.

Accumulated hydrocarbons (shoreline oil) (Impact threshold – 100 g/m^2)

No receptors were predicted to receive shoreline hydrocarbons above the 100 g/m^2 threshold.

Consequence assessment summary

The credible worst-case hydrocarbon spill scenarios that may arise from MEE-02 may present a risk to a range of environmental receptors. Refer to Table 6-33 for a summary of receptors identified by the spill modelling studies. The credible worst-case hydrocarbon volumes that can be released by MEE-02 are significantly smaller than the worst-case loss of well containment volumes considered in MEE-01 and durations are significantly shorter. Risk of a hydrocarbon spill to these receptors are considered in MEE-01 (refer to Section 6.8.3).

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Table 6-33: EMBA – key receptor locations and sensitivities potentially contacted above impact thresholds by subsea loss of containment with summary hydrocarbon spill contact

Environmental setting	Receptor	Environmental, social, cultural, heritage and economic aspects presented as per the environmental risk definitions (Woodside's risk management procedure)																												Probability of hydrocarbon contact and fate (%)					
		Physical		Biological																					Socio-economic and cultural					Socio-cultural EMBA		EMBA			
		Water quality	Sediment quality	Marine primary producers			Other communities / habitats							Protected species									Other species								Surface hydrocarbon (1–10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbons (≥ 10 g/m²)	Entrained hydrocarbons (≥ 1000 ppb)	Dissolved hydrocarbons (≥10 ppb)	Accumulated hydrocarbons (≥ 100 g/m²)
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds / macroalgae	Mangroves	Spawning / nursery areas	Open water – productivity / upwelling	Non-biogenic reefs	Offshore filter feeders and / or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions / fur seals)	Marine turtles (foraging, internesting areas, significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Seabirds and migratory shorebirds	Pelagic fish populations	Demersal fish populations	Fisheries - commercial	Fisheries - traditional	Tourism and recreation	Protected areas / heritage – european / indigenous / underwater cultural heritage	Offshore oil and gas infrastructure (topside and subsea)						
Offshore	Gascoyne AMP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				13	
	Montebello MP	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				1,5	45	
	Ningaloo MP										✓	✓	✓	✓					✓					✓				✓	✓					3.5	9	
	Shark Bay MP	✓	✓		✓					✓					✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓						1.5	
Mainland (nearshore)	Exmouth	✓	✓	✓	✓	✓	✓					✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓						4	
Island Groups	Barrow Island (including MMA, MP)	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓					7	
	Montebello Islands (including MP and Hermite Islands)	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓						6	
	Southern Pilbara Islands (Bessieres, Flat, Peak, Serrurier)	✓	✓		✓		✓		✓			✓		✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	✓						2.5	
State Marine Parks and Nature Reserves	Muiron Islands MMA	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓						2.5	
	Ningaloo Coast WH										✓	✓	✓	✓					✓				✓					✓	✓						9	
	Ningaloo MP (State)										✓	✓	✓	✓					✓				✓					✓	✓						7	

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Environmental setting	Receptor	Environmental, social, cultural, heritage and economic aspects presented as per the environmental risk definitions (Woodside's risk management procedure)																											Probability of hydrocarbon contact and fate (%)					
		Physical		Biological																				Socio-economic and cultural						Socio-cultural EMBA		EMBA			
		Water quality	Sediment quality	Marine primary producers			Other communities / habitats								Protected species								Other species								Surface hydrocarbon (1–10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbons (≥ 10 g/m²)	Entrained hydrocarbons (≥ 1000 ppb)	Dissolved hydrocarbons (≥10 ppb)	Accumulated hydrocarbons (≥ 100 g/m²)
		Open water (pristine)	Marine sediment (pristine)	Coral reef	Seagrass beds / macroalgae	Mangroves	Spawning / nursery areas	Open water – productivity / upwelling	Non-biogenic reefs	Offshore filter feeders and / or deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions / fur seals)	Marine turtles (foraging, internesting areas, significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Seabirds and migratory shorebirds	Pelagic fish populations	Demersal fish populations	Fisheries - commercial	Fisheries - traditional	Tourism and recreation	Protected areas / heritage – european / indigenous / underwater cultural heritage	Offshore oil and gas infrastructure (topside and subsea)						
National Park	Cape Range	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓		✓	✓					2.5	
Submerged shoals and reefs	Pilbara Reefs and Shoals (including Brewis Reef, Penguin Bank, Rosily Shoals and Trap Reef)	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓		✓	✓									2.5	
	Montebello Shoals	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓		✓	✓									5	
	Ningaloo Reef	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓		✓	✓									4.5	
	Barrow Island Reefs and Shoals (including Poivre Reef and Tryal Rocks)	✓	✓	✓			✓	✓		✓					✓	✓			✓	✓	✓	✓		✓	✓									1.5	
	Rankin Bank	✓	✓	✓			✓	✓		✓						✓				✓		✓		✓	✓	✓		✓			12.5		4	12.5	50.5	
	Glomar Shoals	✓	✓	✓			✓	✓		✓						✓				✓		✓		✓	✓	✓		✓							4.5	

✓ = Sensitivity potentially contacted above impact thresholds

Note 1: Probabilities greater than 1.

Note 2: Where multiple locations have been grouped, the highest probability value among these locations has been included in the table.

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MEE-02 pipeline and riser loss of containment – risk analysis
Bowtie risk analysis was undertaken to assess MEE-02; refer to Figure 6-17, Figure 6-18, Figure 6-19 and Figure 6-20.

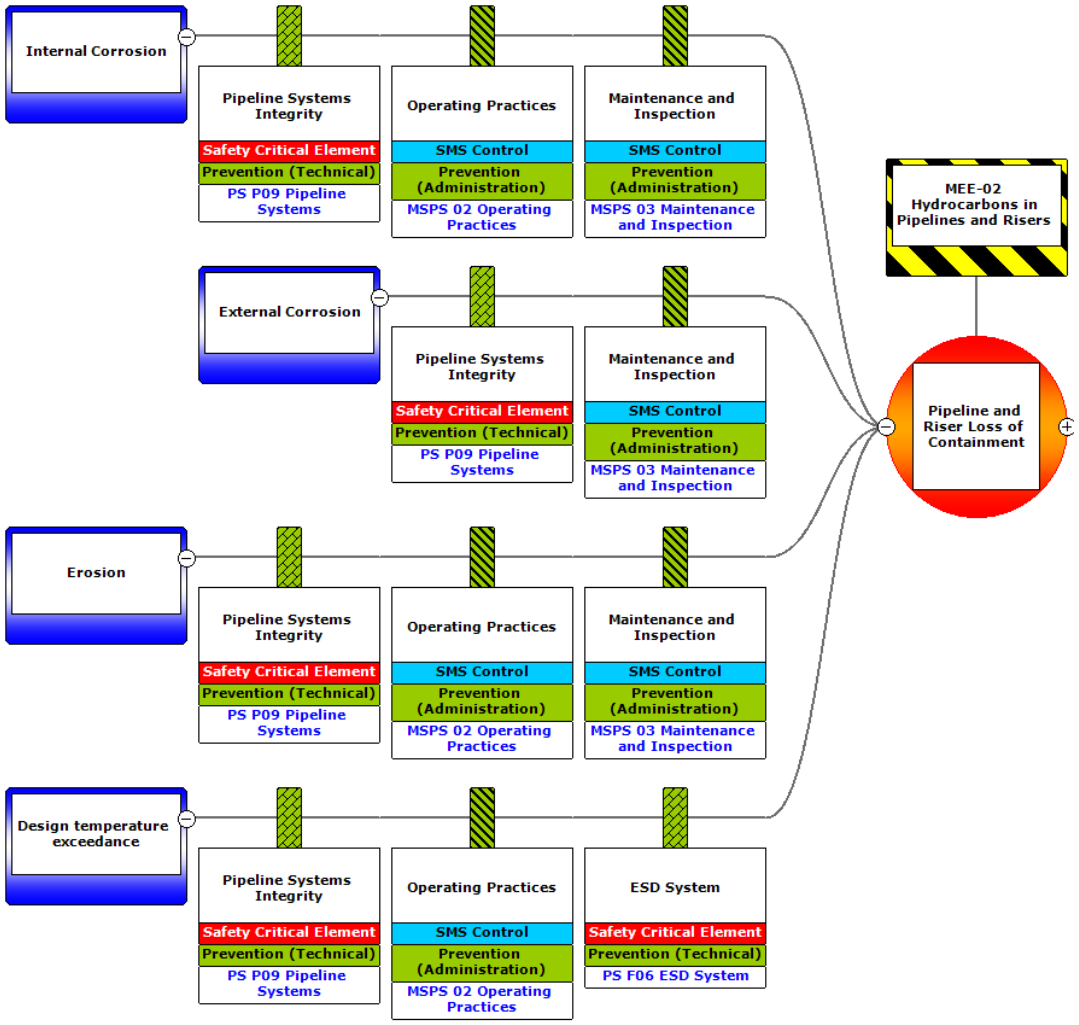


Figure 6-17: MEE-02 pipeline and riser loss of containment (causes 1-5)

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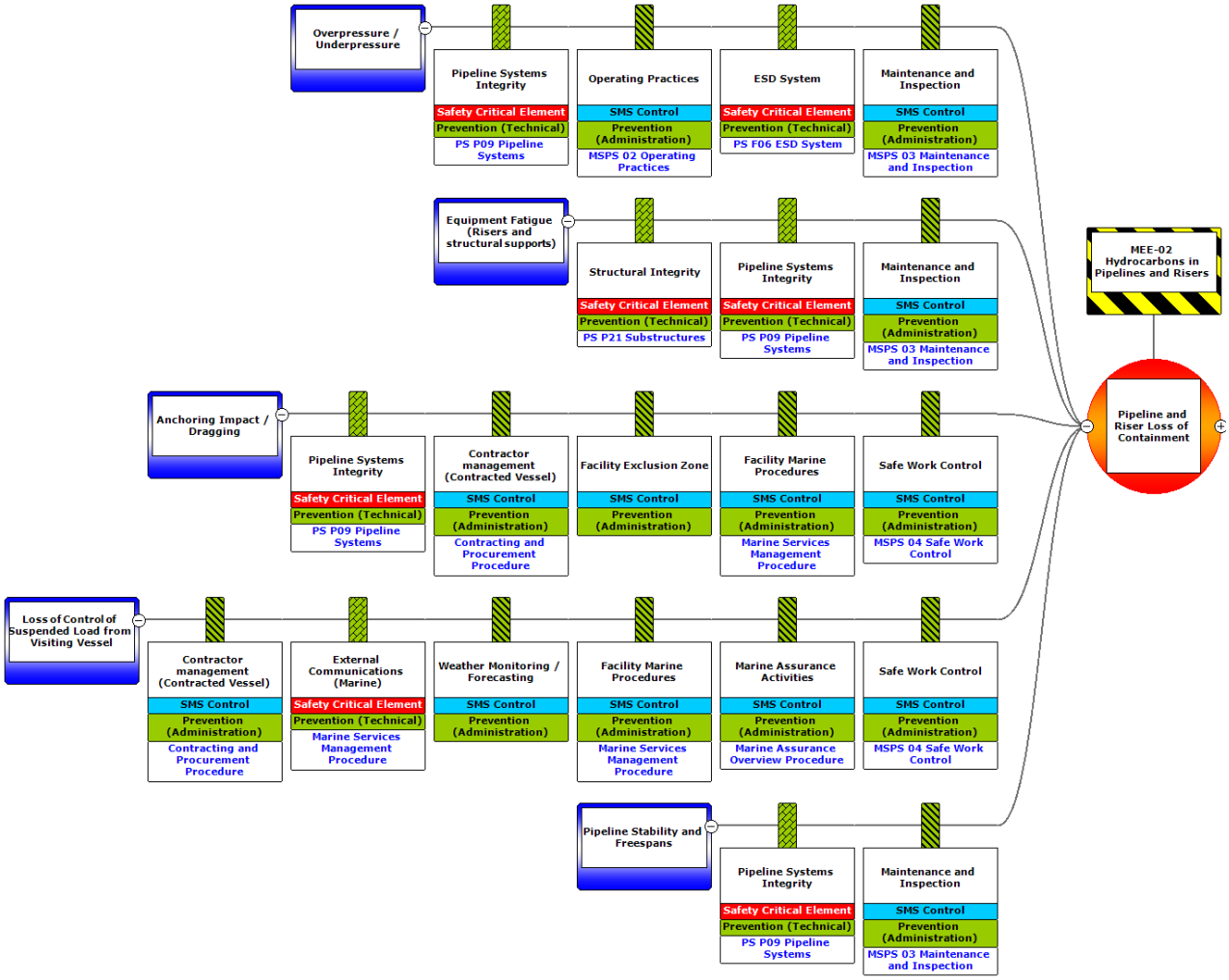


Figure 6-18: MEE-02: pipeline and riser loss of containment (causes 6-10)

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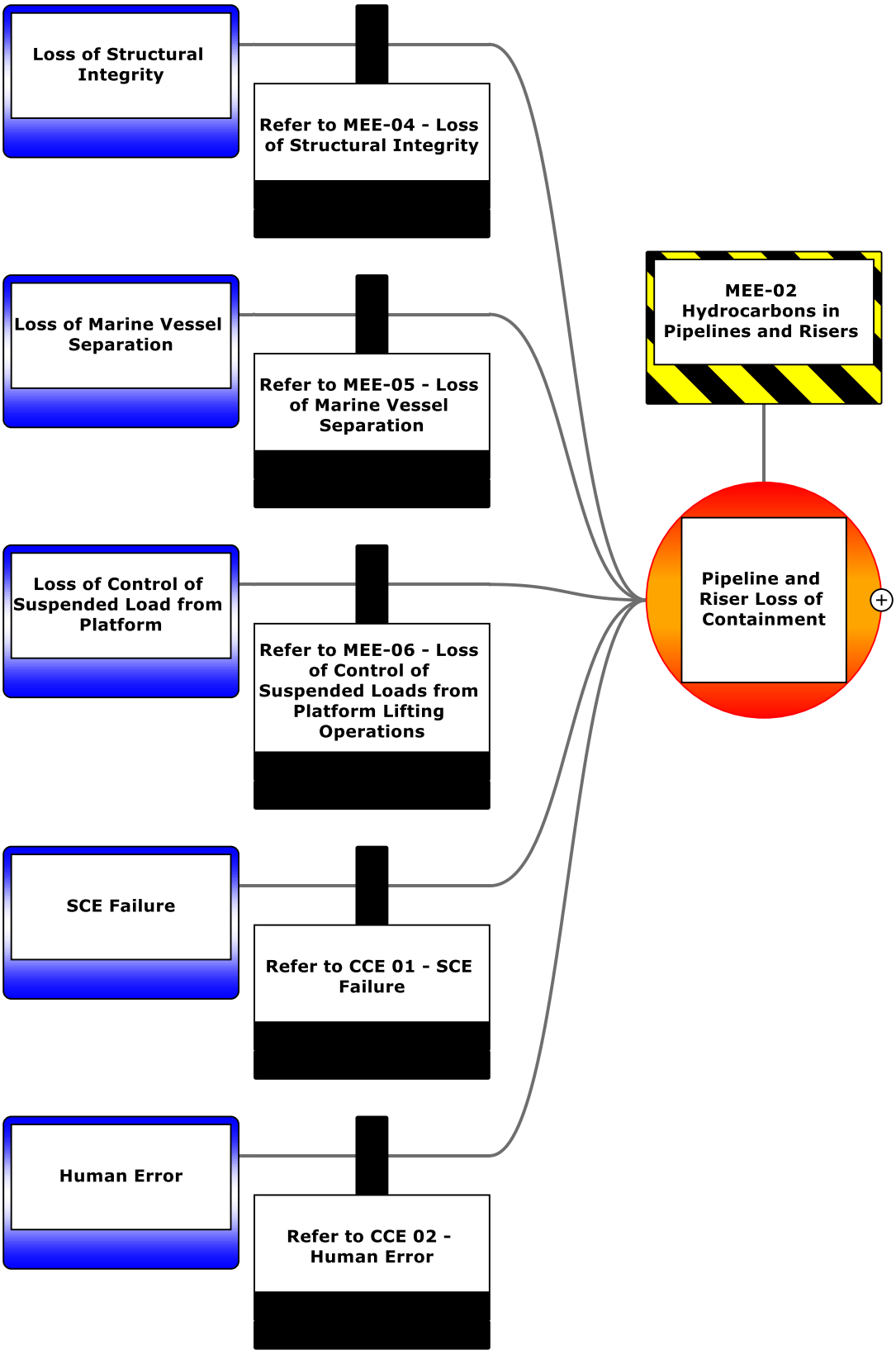


Figure 6-19: MEE-02 Pipeline and riser loss of containment (cause 11-15)

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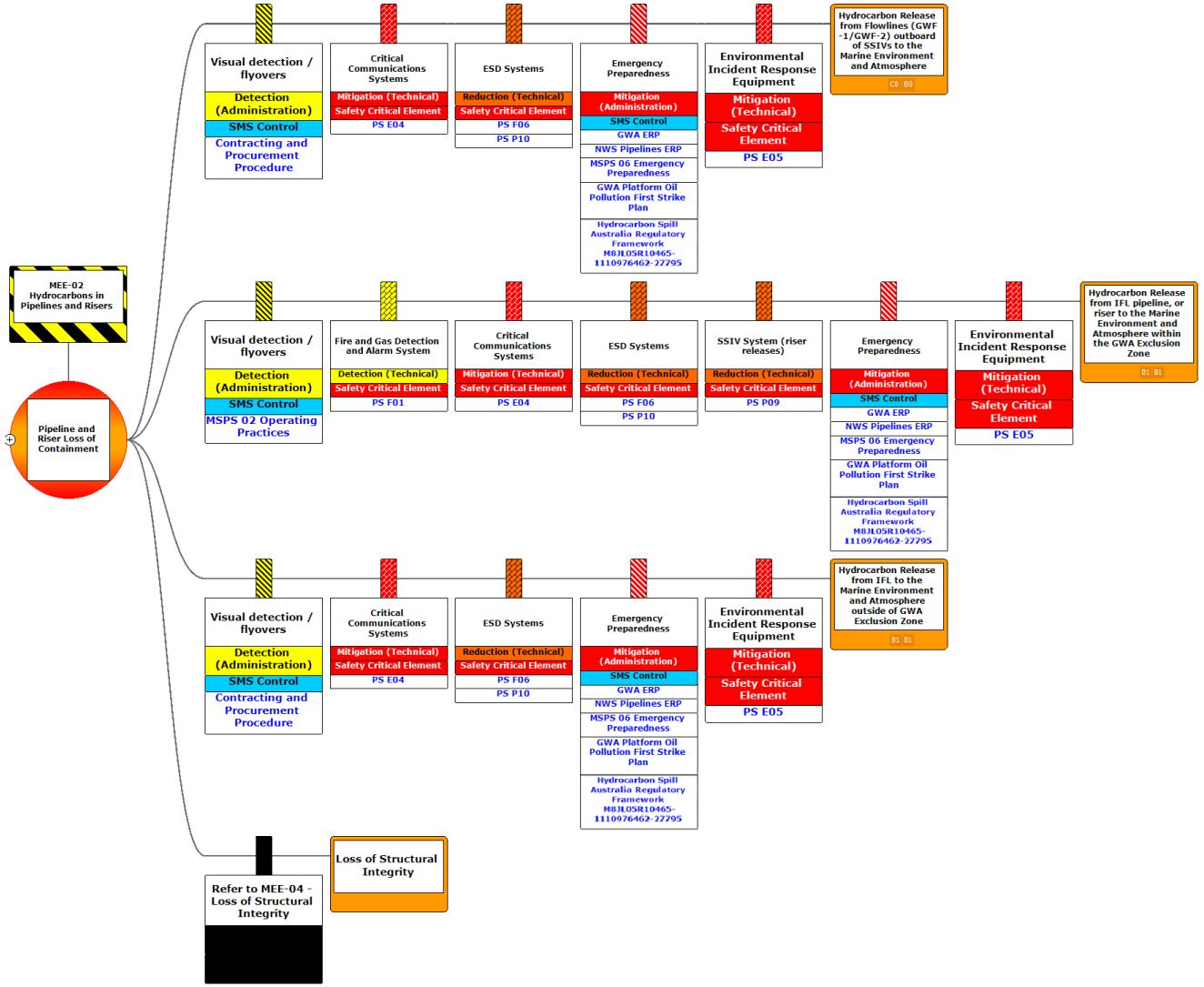


Figure 6-20: MEE-02 Pipeline and riser loss of containment (outcomes 1-4)

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MEE-02 subsea equipment loss of containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
Preventative barriers – safety and environmental critical elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering controls	Maintaining pipeline, riser and hydrocarbon-containing infrastructure integrity to avoid a MEE.	F06 – Safety instrumented system P09 – Pipeline systems P21 – Substructures	Prevention (Technical)	Yes **C 14.1**
Mitigating barrier – safety and environmental critical elements				
Engineering controls	Maintain availability of external and internal communication systems to facilitate response to accidents and emergencies.	E04 – Safety Critical Communication Systems	Mitigation (Technical)	Yes **C 13.2**
Engineering controls	Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	F01 – Fire and Gas detection and alarm systems	Detection (Technical)	Yes **C 13.3**
Engineering controls	Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition (e.g. through appropriate isolation of hazardous inventories) so as to prevent or mitigate the effects of a MEE	F06 – Safety instrumented system P09 – Pipeline systems P10 – Wells (for flowlines)	Reduction/Control (Technical)	Yes **C 13.4**
Emergency response	Maintaining environmental incident response equipment to implement initial response to enact the GWA Facility Operations Oil Pollution First Strike Plan.	E05 – Environmental incident response equipment	Mitigation (Technical)	Yes **C 13.5**
Legislation codes and standards				
Procedures and administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility to:	GWA Safety Case	Prevention / Mitigation (Administration) Legislative requirements – must be adopted	Yes **C 13.7**

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MEE-02 subsea equipment loss of containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
	• identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, thus contributing to management of associated potential environmental consequences of MAEs.			
Procedures and administration	OPGGS (Safety) Regulations 2009: Accepted Safety Case for the Pipeline to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, thus contributing to management of associated potential environmental consequences of MAEs.	North West Shelf Pipelines Safety Case	Prevention/Mitigation (Administration) Legislative requirements – must be adopted	Yes **C 14.2**
Management system specific measures: key standards or procedures				
Procedures and administration	Implementing management systems to maintain: • M02 – Operating practices • M03 – Maintenance and inspections • M04 – Safe work control • Marine Services Operations Standard	MSPS M02 – Operating practices MSPS M03 – Maintenance and inspections MSPS M04 – Safe work control Marine Services Operations Standard Marine Assurance Standard	Prevention (Administration)	Yes – See Section 7.2.9 Implementation Strategy

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MEE-02 subsea equipment loss of containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
	• Marine Assurance Standard • Contracting and Procurement Procedure.	Contracting and Procurement Procedure		
Procedures and administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**
Emergency response and contingency planning	Implement management systems to maintain: • M06 – Emergency preparedness • GWA Emergency Response Plan • GWA Facility Operations Oil Pollution First Strike Plan • Hydrocarbon Spill Australia Regulatory Framework[93] • Contracting and Procurement Procedure.	MSPS M06 – Emergency preparedness GWA Emergency Response Plan GWA Facility Operations Oil Pollution First Strike Plan Hydrocarbon Spill Australia Regulatory Framework Contracting and Procurement Procedure	Mitigation (Administration)	Yes Section 7.2.9 Implementation Strategy Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response

Risk based analysis

For risks identified as MEEs, a detailed risk-based bowtie analysis (as outlined in Section 2.5.3) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event.

Application of Woodside's Risk Management Procedures and implementation of the NWS Pipelines and GWA Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g. inspection, maintenance, testing and monitoring requirements) to ensure technical integrity.

Bowtie analysis was undertaken to assess MEE-02; refer to Figure 6-17**,** Figure 6-18**,** Figure 6-19 and Figure 6-20**.**

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MEE-02 subsea equipment loss of containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
A quantitative spill risk assessment was undertaken (refer Section 6.8.2 for details of the method used).				
Company values				
Refer to company values in demonstration of ALARP for MEE-01 (Section 6.8.3).				
Societal Values				
Refer to societal values in demonstration of ALARP for MEE-01 (Section 6.8.3).				

ALARP statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood unplanned hydrocarbon release as a result of a subsea equipment loss of containment.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of pipelines and risers, ensuring the export pipeline and risers are operated within their design envelope through operating practices, and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the Safety Cases, SCE management procedures including performance standards for SCEs and MSPSs for Safety Critical Management System Controls.

The application of Woodside Risk Management Procedures ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the technical performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, it is considered that MEE risk associated with subsea equipment loss of containment at the GWA facility is managed to ALARP.

MEE-02 subsea equipment loss of containment – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The consequence assessment has considered the relevant principles of ESD: • The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • The principle of inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of	The predicted level of risk to ecosystems, species, habitat or physical or biological attributes from a subsea equipment loss of containment is considered to be of an acceptable level (consequence level, M - Moderate), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant WHPs, AMPs, recovery plans

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MEE-02 subsea equipment loss of containment – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
ALARP and Environmental Performance Outcomes, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) ***External Context*** Woodside has considered feedback from relevant persons during the consequence assessment (Section 5). ***Other Requirements*** The EMBA overlaps BIAs for threatened and migratory species, as well as State and Commonwealth marine protected areas. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. As demonstrated in Section 6.10, the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans.	• the predicted level of risk has been reduced to ALARP. ***Environmental performance consideration*** To manage a subsea equipment loss of containment to ecosystems, species, habitat or physical or biological attributes to an acceptable level the following EPO has been applied: **EPO 14:** No release of hydrocarbons to the marine environment due to subsea equipment loss of containment. The adopted controls are considered appropriate to manage the risks of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 14 No release of hydrocarbons to the marine environment due to loss of containment from subsea equipment.	**C 14.1** Maintain pipeline, riser and hydrocarbon-containing infrastructure integrity to avoid a MEE.	**PS 14.1** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System • P09 – Pipeline Systems • P21 – Substructures; to together; o maintain the minimum required mechanical and structural integrity to prevent loss of containment that may result in a MEE; and o detect and respond to pre-defined initiating conditions to protect mechanical integrity.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.2 Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	**PS 13.2** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.3 Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	**PS 13.3** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	C 13.4 Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE.	**PS 13.4** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.5 Maintaining environmental incident response equipment to implement initial response to enact the Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan.	**PS 13.5** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** Refer to Section 6.8.3	**MC 13.7.1** Refer to Section 6.8.3
	C 14.2 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for NWS Pipelines.	**PS 14.2** An accepted Safety Case is implemented, and notification and reporting is undertaken in accordance with the Regulations (as applicable).	**MC 13.7.1** Refer to Section 6.8.3
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3
Mitigation – hydrocarbon spill response	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.		

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6.8.5 Unplanned hydrocarbon release: topsides loss of containment (MEE-03)

Context		
Topsides – Section 3.5.1 Process description – Section 3.6.2 Operational chemical use – Section 3.6.10	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key ecological features – Section 4.7 Protected places – Section 4.8 Socio-economic– Section 4.10	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems / habitat	Species	Socio-economic	Decision type	Consequence	Likelihood	Risk rating	ALARP tool	Acceptability	Outcome
Hydrocarbon release from topside process equipment to the marine environment and atmosphere.		✓	✓	✓	✓	✓	B	C	1	M	LCS RBA CV SV	Acceptable, if ALARP	EPO 15
Hydrocarbon release from topsides non-process equipment to the marine environment.		✓	✓	✓	✓	✓	B	D	1	M			

Description of source of risk

The hydrocarbon processing equipment on the GWA platform contains a considerable volume of hydrocarbons. The hydrocarbon inventory of this processing equipment may be released, potentially resulting in hydrocarbons being released to the marine environment. Topside process and non-process hydrocarbon inventories are provided in Table 3-4 and Table 3-3.

Due to the potential consequences of a worst-case topsides loss of containment, this risk is considered to be a MEE (MEE-03). The following events could lead to loss of containment from the topsides:

- internal corrosion
- external corrosion
- erosion
- material defect
- welding defect
- piping/equipment repair defect
- vibration fatigue failure
- equipment overpressure
- catastrophic turbine failure
- loss of structural integrity
- loss of marine vessel separation
- loss of control of suspended load
- human/management error
- low temperature
- overstress of topsides equipment

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- equipment fatigue
- rotating equipment failure / uncontrolled transfer (including overflow)
- extreme weather.

A number of common failure causes due to human error and Safety Critical Equipment (SCE) failures are presented in the generic human error and SCE failure bowties in Section 6.8.9.

Escalation from other MEEs can also potentially lead to cause topsides loss of containment:

- loss of structural integrity (MEE-04) (Section 6.8.6)
- loss of marine vessel separation (MEE-05) (Section 6.8.7)
- loss of control of suspended load from facility lifting operations (MEE-06) (Section 6.8.8).

GWA's diesel storage tanks (194 m^3 and 149 m^3) are housed within the East and West crane pedestals and are integral into the structure which supports the crane. As such the tank structures have a low probability of failure. Diesel distribution draws from storage and a stainless steel break tank (0.8 m^3), and feeds the stainless steel diesel fire pump day tank (5.4 m^3), emergency diesel generator (5.9 m^3) incorporated into the base frame manual diesel transfer occurs for day tanks for both cranes situated within the crane structure (1.6 m^3 and 2 m^3 respectively) and small inventories to survival craft storage tanks.

Topsides loss of containment – credible hydrocarbon spill scenario

The following hydrocarbon inventories were considered as the worst-case topsides loss of containment scenario:

- Scenario 6 – instantaneous release from the GWA facility of:
  - gas and GWA Condensate: 135 m^3;
  - GWA condensate: 403 m^3; and
  - marine diesel: 343 m^3.

The locations, hydrocarbon types and volumes for Scenario 6 are provided in Table 6-34.

Table 6-34: Summary of worst-case topsides loss of containment hydrocarbon release scenario

Scenario	Hydrocarbon	Duration (hrs)	Depth (m)	Latitude (D°M'S'' S)	Longitude (D°M'S'' E)	Total release volume (m^3)
Topsides loss of containment	Gas and condensate	Instantaneous	Surface	19° 39' 8"	115° 55' 46"	135
	Condensate					403
	Marine diesel					343

Decision type, risk analysis and ALARP tools

Woodside has a good history of implementing industry standard practice in topsides design and construction. In the company's recent history, it has not experienced any topside integrity events that have resulted in significant releases or significant environmental impacts. The GWA facility has never experienced a worst-case topsides loss of containment in its operational history.

Decision type

A decision type 'B' has been applied to this risk under the Guidance on Risk Related Decision Making (OEUK 2025). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk based tools including the Bowtie Methodology (described in Section 2.5.3) and hydrocarbon spill trajectory modelling (Section 6.8.2). Company and societal values were also considered in the demonstration of ALARP and acceptability.

The release of hydrocarbons as a result of topsides loss of containment is considered a Major Environment Event (MEE-03). The hazard associated with this MEE is hydrocarbon inventory on the GWA platform in process and non-process equipment.

Quantitative spill risk assessment

Credible worst-case hydrocarbon Scenarios 8 (MEE-05) and MEE-04 are considered to apply to the potential topsides loss of containment. Refer to Section 6.8.7 (MEE-05) and Section 6.8.6 (MEE-04) for a discussion of these credible worst-case spill scenarios.

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Likelihood

In accordance with the Woodside Risk Matrix, a worst-case topsides loss of containment has been defined as a 'highly unlikely' event as it is 'has occurred once or twice in the industry' (experience based likelihood) and aligns with a frequency of a '1 in 10,000 to 1 in 100,000 year' event.

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon were considered during the impact assessment for a worst-case topsides loss of containment (presented in the following section). These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (Section 6.8.3) and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence assessment

Environment that may be affected

As discussed under description of source of risk section above, the potential risks from hydrocarbon release caused by a topsides loss of containment are comparable to those which would result from:

- loss of structural integrity (MEE-04 Section 6.8.6)
- loss of marine vessel separation (MEE-05 Section 6.8.7).

The potential impacts are therefore discussed in the above mentioned sections.

MEE-03 topsides loss of containment – risk analysis

A bowtie risk analysis was undertaken to assess MEE-03. Refer to Figure 6-21, Figure 6-22**,** Figure 6-23**,** and Figure 6-24 for bowtie diagrams.

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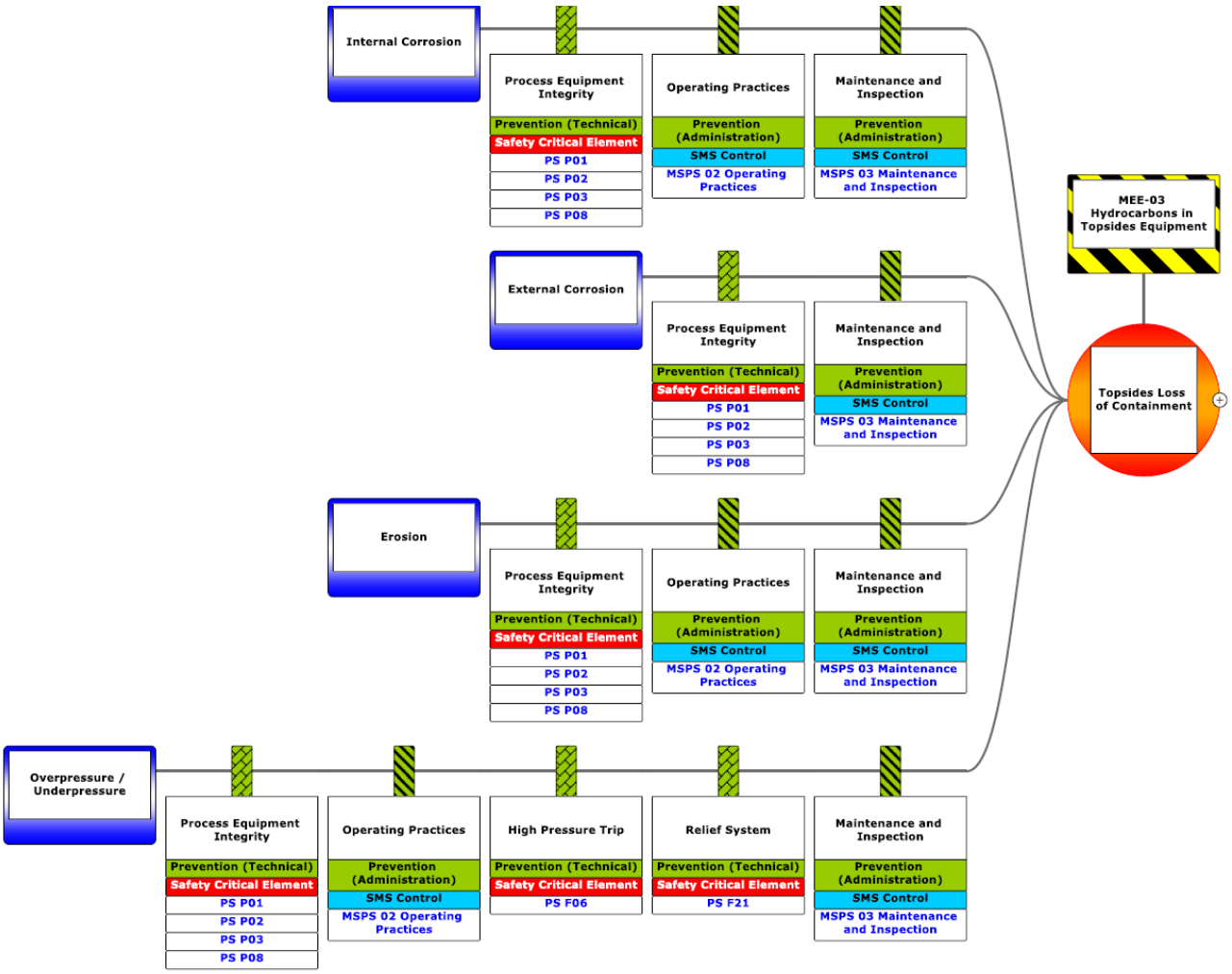


Figure 6-21: MEE-03 Topsides loss of containment (cause 1-4)

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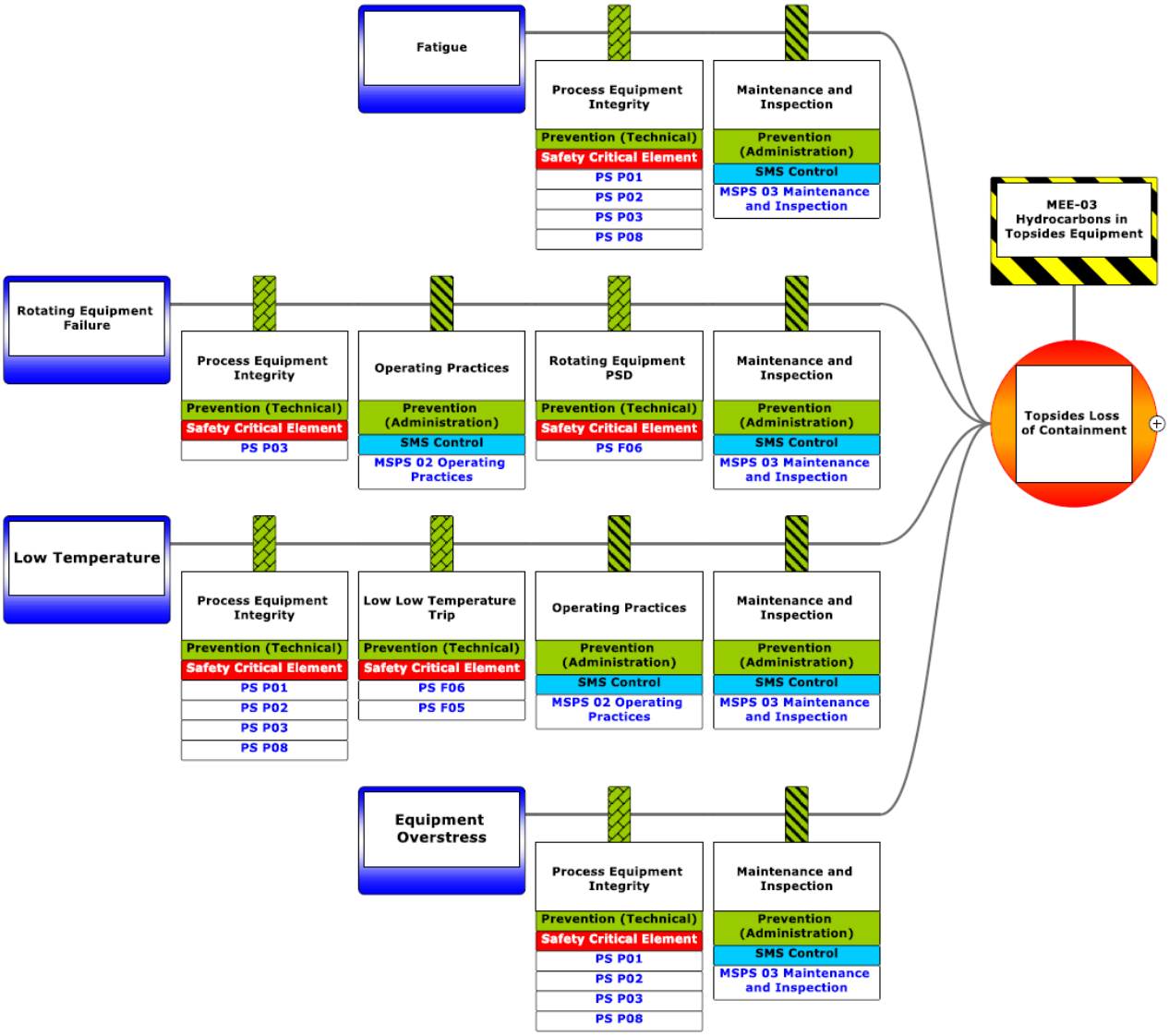


Figure 6-22: MEE 03 Topsides loss of containment (cause 5-8)

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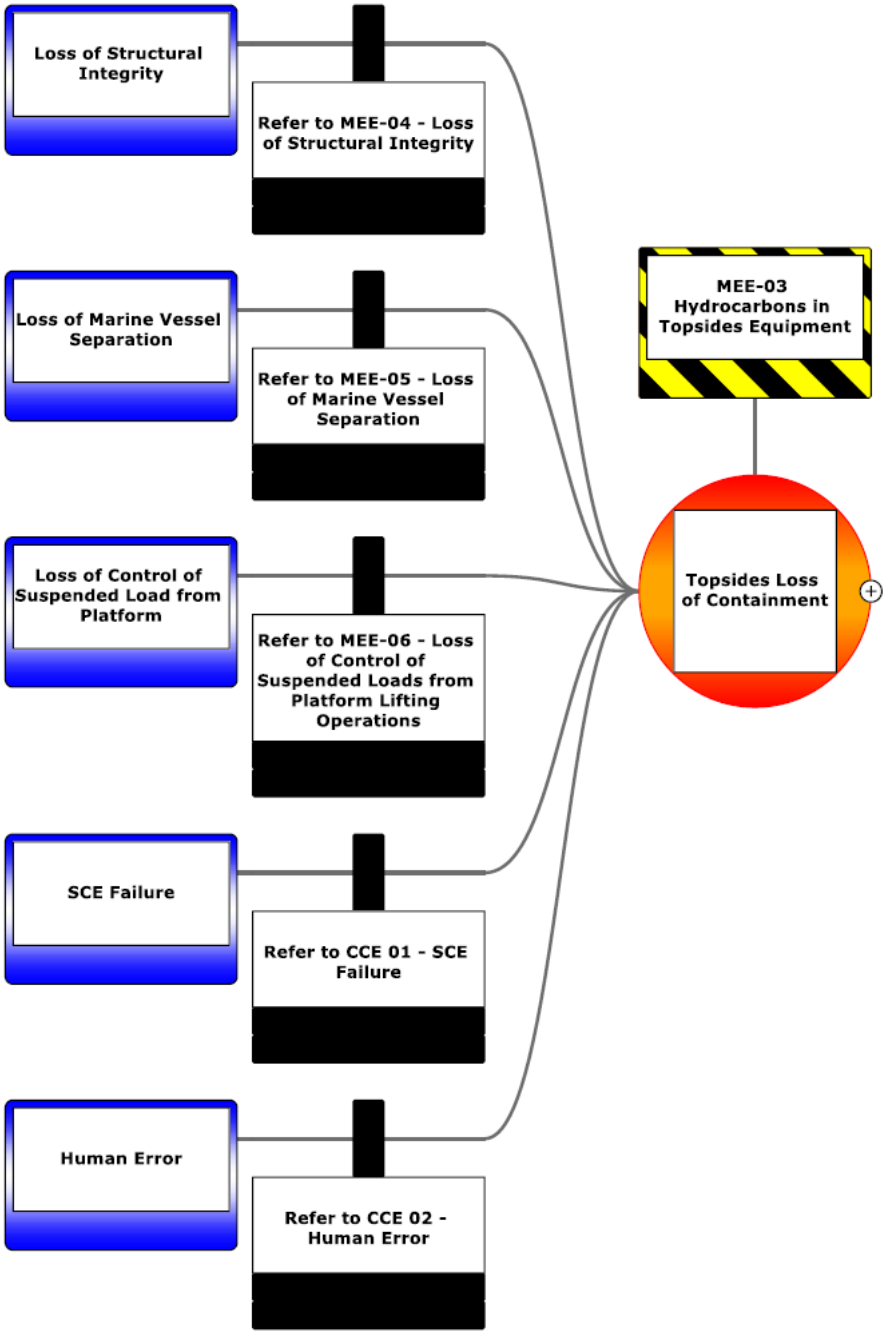


Figure 6-23: MEE-03 Topsides loss of containment (causes 9-13)

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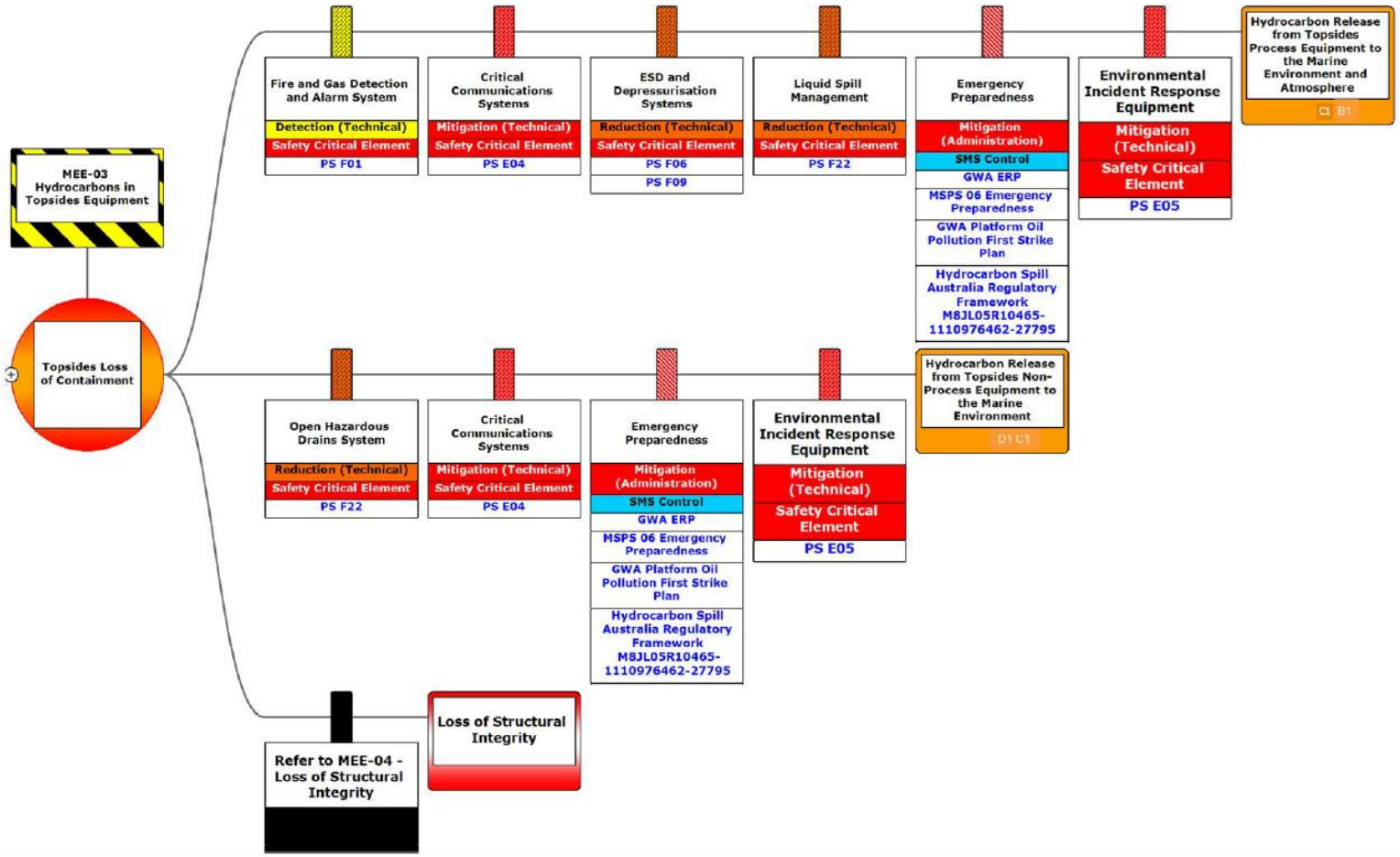


Figure 6-24: MEE-03 Topsides loss of containment (outcomes)

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MEE-03 topsides loss of containment – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
Preventative barriers – safety and environmental critical elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering controls	Maintain topsides hydrocarbon-containing infrastructure integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of a MEE.	P01 – Pressure Vessels P02 – Heat Exchangers P03 – Rotating Equipment P08 – Piping Systems	Prevention (Technical)	Yes **C 15.1**
Engineering controls	Maintain Safety Instrumented Systems and Relief System to prevent hydrocarbon loss of containment in order to prevent a MEE	F06 – Safety Instrumented System F21 – Relief Systems	Prevention (Technical)	Yes **C 15.2**
Mitigating barrier – safety and environmental critical elements				
Engineering controls (per MEE-02)	Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	E04 – Safety critical communication systems	Mitigation (Technical)	Yes **C 13.2**
Engineering controls (per MEE-02)	Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	F01 – Fire and gas detection and alarm systems	Detection (Technical)	Yes **C 13.3**
Engineering controls (per MEE-02)	Maintain Safety Instrumented Systems (e.g. ESD and safety instrumented functions) system, Blowdown and Open Hazardous Drains system to isolate, remove and control hazardous inventories so as to mitigate the effects of a MEE/ prevent escalation to a MEE.	F06 – Safety Instrumented System F09 – Depressurisation (Blowdown) to; F22 – Open Hazardous Drains	Reduction/Control (Technical)	Yes **C 13.4**
Emergency response	Maintain environmental incident response equipment to implement initial response to enact the GWA Facility Operations Oil Pollution First Strike Plan.	E05 – Environmental Incident Response Equipment	Mitigation (Technical)	Yes **C 13.5**

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Legislation Codes and Standards				
Procedures and administration	OPGGS (Safety) Regulations 2009: Accepted Safety Case for the GWA facility to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, • thus contributing to management of associated potential environmental consequences of MAEs.	GWA Safety Case	Prevention/Mitigation (Administration) Legislative requirements – must be adopted	Yes **C 13.7**
Management system specific measures: key standards or procedures				
Procedures and administration	Implementing management systems to maintain: • M02 – Operating practices • M03 – Maintenance and inspections.	MSPS M02 – Operating practices MSPS M03 – Maintenance and inspections	Prevention (Administration)	Yes – See **Section 7.2.9** Implementation Strategy
Procedures and administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**

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Emergency Response and Contingency Planning	Implement management systems to maintain: • M06 – Emergency preparedness • GWA Emergency Response Plan • GWA Facility Operations Oil Pollution First Strike Plan • Hydrocarbon Spill Australia Regulatory Framework[94]	MSPS M06 – Emergency preparedness GWA Emergency Response Plan GWA Operations Oil Pollution First Strike Plan	Mitigation (Administration)	Yes – See Implementation Strategy Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.

Risk based analysis

For risks identified as MEEs, a detailed risk based Bowtie Analysis (as outlined in Section 2.5.3) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event.

Application of Woodside's Risk Management Procedures and implementation of the GWA Safety Case ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g. inspection, maintenance, testing and monitoring requirements) to ensure technical integrity.

A quantitative spill risk assessment was undertaken (refer Section 6.8.2 for details of the method used).

Company values

Refer to Company Values in demonstration of ALARP for MEE-01 (Section 6.8.3).

Societal values

Refer to Societal Values in demonstration of ALARP for MEE-01 (Section 6.8.3).

ALARP statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the risks of a very low likelihood of a topsides loss of containment.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of the facility, ensuring the equipment is operated within the design envelope through operating practices, and assurance through maintenance and inspection. If a topsides loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the GWA Safety Case, SCE management procedures including performance standards for SCEs, and MSPSs for Safety Critical Management System Controls.

The application of Woodside Risk Management Procedures and implementation of the GWA Safety Case ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP.

Given the controls in place to prevent and control topsides loss of containment events and mitigate their consequences, alongside procedural control of facility operations, it is considered that MEE risk associated a topsides loss of containment is managed to ALARP.

[94] In accordance with Regulation 56 of the Environmental Regulations, references to the Hydrocarbon Spill Australia Regulatory Framework within this document refer to the version submitted with accepted North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website at: https://docs.nopsema.gov.au/A1282743.

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MEE-03 topsides loss of containment – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The consequence assessment has considered the relevant principles of ESD: • The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • The principle of inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) ***External Context*** Woodside has considered feedback from relevant persons during the consequence assessment (Section 5). ***Other Requirements*** The EMBA overlaps BIAs for threatened and migratory species, as well as State and Commonwealth marine protected areas, however potential impacts from topside loss of containment are predicted to be concentrated around the GWA platform. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. As demonstrated in Section 6.10, the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans.	The predicted level of risk to ecosystems, species, habitat or physical or biological attributes from a topsides loss of containment is considered to be of an acceptable level (consequence level, M - Moderate), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant WHPs, AMPs, recovery plans • the predicted level of risk has been reduced to ALARP. ***Environmental performance consideration*** To manage a topsides loss of containment to ecosystems, species, habitat or physical or biological attributes to an acceptable level the following EPO has been applied: **EPO 15:** No release of hydrocarbons to the marine environment due to a topsides loss of containment. The adopted controls are considered appropriate to manage the risks of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 15 No release of hydrocarbons to the marine environment due to a topsides loss of containment.	**C 15.1** Maintaining topsides hydrocarbon-containing infrastructure integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	**PS 15.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P01 – Pressure Vessels • P02 – Heat Exchangers • P03 – Rotating Equipment	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
		• P08 – Piping Systems; to together: o provide minimum required mechanical integrity for identified SCE systems (piping, heat exchangers, rotating equipment, and pressure vessel) for operation within defined integrity limits so as to prevent a loss of containment that may result in a MEE.	
	C 15.2 Maintain Safety Instrumented Systems and relief system to prevent hydrocarbon loss of containment in order to prevent a MEE.	**PS 15.2** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System to: o detect and respond to pre-defined initiating conditions to protect mechanical integrity and prevent loss of containment (including uncontrolled diesel transfer/overflow). • F21 – Relief Systems to; o protect pressurised equipment, equipment exposed to high pressures and piping from a loss of containment to prevent escalation to a MEE.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.2 Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	**PS 13.2** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.3 Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	**PS 13.3** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.4 Maintain Safety Instrumented Systems (e.g. ESD and safety instrumented functions) system, Blowdown and Open Hazardous Drains system to isolate, remove and control hazardous inventories so as to	**PS 13.4** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
	mitigate the effects of a MEE/ prevent escalation to a MEE.		
	C 13.5 Maintain environmental incident response equipment to implement initial response to enact the GWA Facility Operations Oil Pollution First Strike Plan.	**PS 12.5** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** Refer to Section 6.8.3	**MC 13.7.1** Refer to Section 6.8.3
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3
Mitigation – hydrocarbon spill response	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.		

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6.8.6 Unplanned hydrocarbon release: loss of structural integrity (MEE-04)

Context		
Topsides – Section 3.5.1 Subsea components – Section 3.5.2 Process description – Section 3.6.2 Operational chemical use – Section 3.6.10	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key ecological features – Section 4.7 Protected places – Section 4.8 Socio-economic– Section 4.10	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems / habitat	Species	Socio-economic	Decision type	Consequence / impact	Likelihood	Risk rating	ALARP tool	Acceptability	Outcome
Hydrocarbon release from platform well to the marine environment and atmosphere.	✓	✓	✓	✓	✓	✓	B	B	1	M	LCS RBA CV SV	Acceptable, if ALARP	EPO 16
Hydrocarbon release from pipeline and riser to the marine environment and atmosphere.		✓	✓		✓			B	0				
Hydrocarbon release from topsides equipment to the marine environment and atmosphere.		✓	✓	✓	✓	✓		C	1				
Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of GWA.	✓	✓	✓	✓	✓	✓		C	0				

Description of source of risk

Extreme environmental conditions, or other causes which result in an exceedance of the design criteria and a catastrophic failure of the facility and individual equipment (e.g. cranes, flare tower, etc.), has been identified as a potential MEE (MEE-04).

Catastrophic structural failure of the GWA facility could lead to the release of hydrocarbons from platform wells; topsides process and non-process hydrocarbon inventories; and pipeline / IFL inventories.

The following causes of structural failure of GWA were identified:

- excessive environmental loading (e.g. from cyclone, high waves)
- seismic events / seabed instability
- fire and blast / overpressure event
- external corrosion
- internal corrosion (e.g. of caissons)
- fatigue

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- material defect
- marine growth weight and wave loading
- subsea loss of containment
- loss of marine vessel separation (refer to MEE-05, Section 6.8.7).

There is a possibility of platform collapse ('slow' or 'rapid') caused by the extreme loads induced by strong winds and extreme waves. Extreme weather may induce fracture of pipework due to vibration/fatigue and loosen/dislodge objects/projectiles causing impact to equipment/pipework and subsequently result in a loss of containment.

Structural damage to the platform resulting from the causes listed above could be minor or could, in the most extreme situation, result in total loss of the platform. The type of structural failure considered here is restricted to major structural damage (e.g. catastrophic collapse of the jacket or release of hydrocarbons on or adjacent to the platform). Such events are, by definition, beyond the design basis for the platform. Structural damage can affect any area of the platform.

Loss of structural integrity – credible hydrocarbon spill scenario

A loss of structural integrity could result in a significant release of hydrocarbons. Hydrocarbon releases may result in a spill to the marine environment, as described in:

- well loss of containment (MEE-01 Section 6.8.3)
- subsea loss of containment (MEE-02 Section 6.8.4)
- topsides loss of containment (MEE-03 Section 6.8.5)
- loss of marine vessel separation (MEE-05 Section 6.8.7)

Worst case hydrocarbon release scenarios for platform well loss of containment, subsea loss of containment, topsides loss of containment that could result from loss of structural integrity of the GWA platform are discussed in the relevant sections referenced above. Relevant trajectory modelling as applicable to these scenarios is also discussed in the above-mentioned sections.

Decision type, risk analysis and ALARP tools

Woodside implements industry standard practice in structural design and construction. The GWA facility has never experienced a worst-case loss of containment due to structural failure in its operational history.

Decision type

A decision type 'B' has been applied to this risk under the Guidance on Risk Related Decision Making (OEUK 2025). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk based tools including the Bowtie Methodology (described in Section 2.5.3) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and stakeholder consultation.

The loss of structural integrity is considered a Major Environment Event (MEE-04). The hazards associated with this MEE are hydrocarbons in platform wells, pipelines, process and non-process inventories and potentially vessels, wellheads, and the GWA platform itself.

Quantitative Spill Risk Assessment

Credible worst-case hydrocarbon scenarios 2, 3, 4, 5 and 6 are considered to apply to a loss of structural integrity (MEE-04). Refer to the Section 6.8.3 (MEE-01; Scenario 2), Section 6.8.4 (MEE-02; Scenarios 3,4 and 5) and Section 6.8.5 (MEE-03; Scenario 6) for a discussion of these credible spill scenarios.

Likelihood

In accordance with the Woodside Risk Matrix, the following likelihoods have been assigned to the sources of risk:

- hydrocarbon release from platform well to the marine environment and atmosphere / hydrocarbon release from topsides equipment to the marine environment and atmosphere (MEE-01): Highly Unlikely (refer to Section 6.8.3)
- marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of GWA (MEE-03): Highly Unlikely (Section 6.8.5)

Consequence

The spatial extent and fate (including weathering) of the spilled hydrocarbon and the potential seabed disturbance footprint from the GWA facility were considered during the impact assessment for a worst-case loss of structural integrity. These considerations were informed primarily by the outputs from the numerical modelling studies, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (Section 6.8.2) and relevant literature and studies considering the effects of hydrocarbon exposure.

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Consequence assessment
Environment that may be affected As discussed under Description of Source of Risk, the potential impacts from hydrocarbon release caused by a loss of structural integrity are those which would result from: • well loss of containment (MEE-01 Section 6.8.3) • subsea loss of containment (MEE-02 Section 6.8.4) • topsides loss of containment (MEE-03 Section 6.8.5) • loss of marine vessel separation (MEE-05 Section 6.8.7) The potential impacts are therefore discussed in the above mentioned sections. **Seabed disturbance** In the event of loss of structural integrity there is the potential for collapse of the platform leading to an incremental increase of the facility's footprint on the seabed. The potential area that would be affected can conservatively be defined as the existing GWA facility footprint plus 100 m in all directions, that is approximately 300 m by 350 m (0.105 km^2). The benthic habitats surrounding the GWA platform have been subject to historical disturbance (e.g. GWA construction, discharge of drill cuttings) and are considered to be of low ecological value (although it is acknowledged that the GWA platform provides artificial hard substrate, which has formed the basis of relatively high biodiversity communities when compared to the surrounding seabed). The physical disturbance to the seabed resulting from the collapse of the GWA platform would be localised, but result in long-term disturbance to benthic communities. The GWA platform could act as a source of environmental contaminants due to material onboard the platform (e.g. chemical / hydrocarbon inventories, corrosion of structural materials, debris etc.). The potential for contamination would diminish over time as the structure degrades. Depending on the nature of the loss of structural integrity, complete or partial salvage of the GWA platform may not be feasible. Any structures not able to be recovered would be left on the seabed indefinitely. These structures are expected to be colonized by marine organisms, and a reef habitat would develop over time on the structures.

MEE-04 loss of structural integrity – risk analysis
A bowtie risk analysis was undertaken to assess MEE-04. Refer to Figure 6-25**,** Figure 6-26 and Figure 6-27 for bowtie diagrams.

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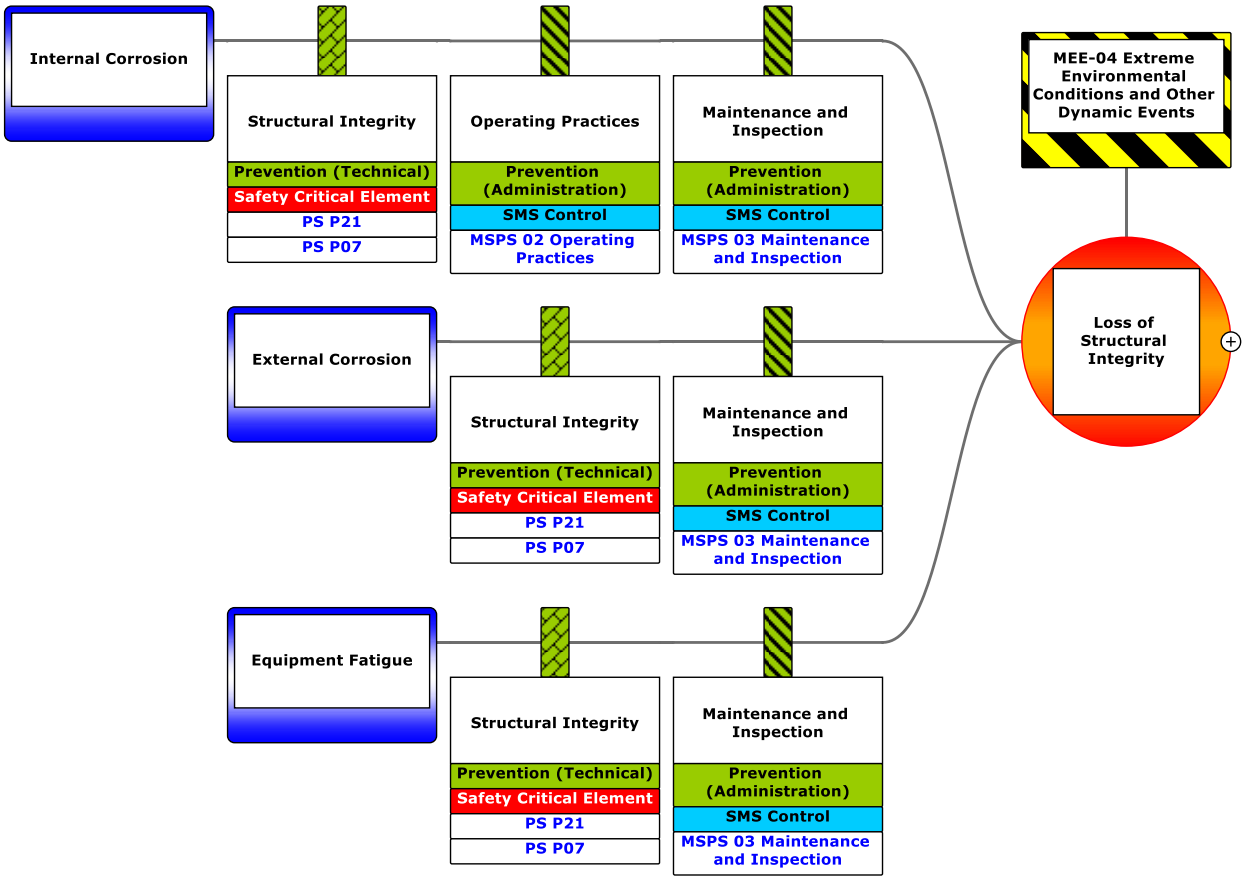


Figure 6-25: MEE-04 Loss of structural integrity (causes 1-3)

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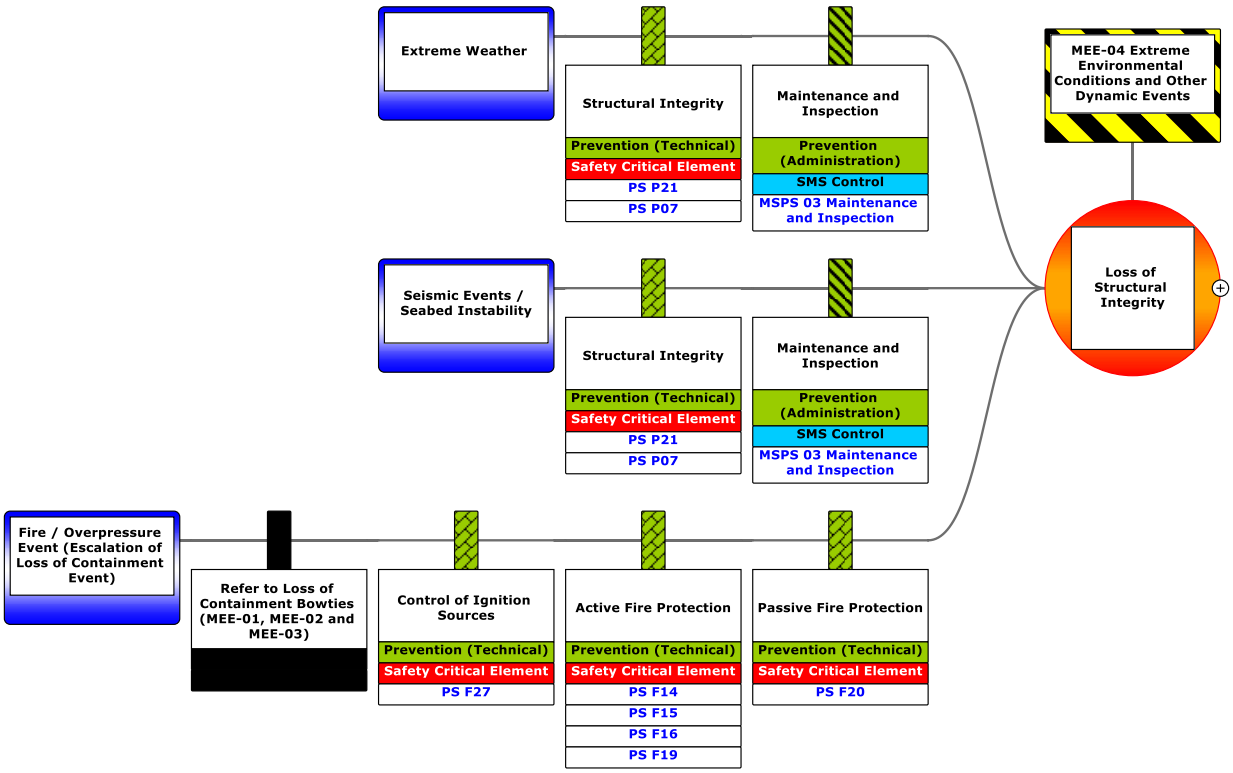


Figure 6-26: MEE-04 Loss of structural integrity (cause 4-6)

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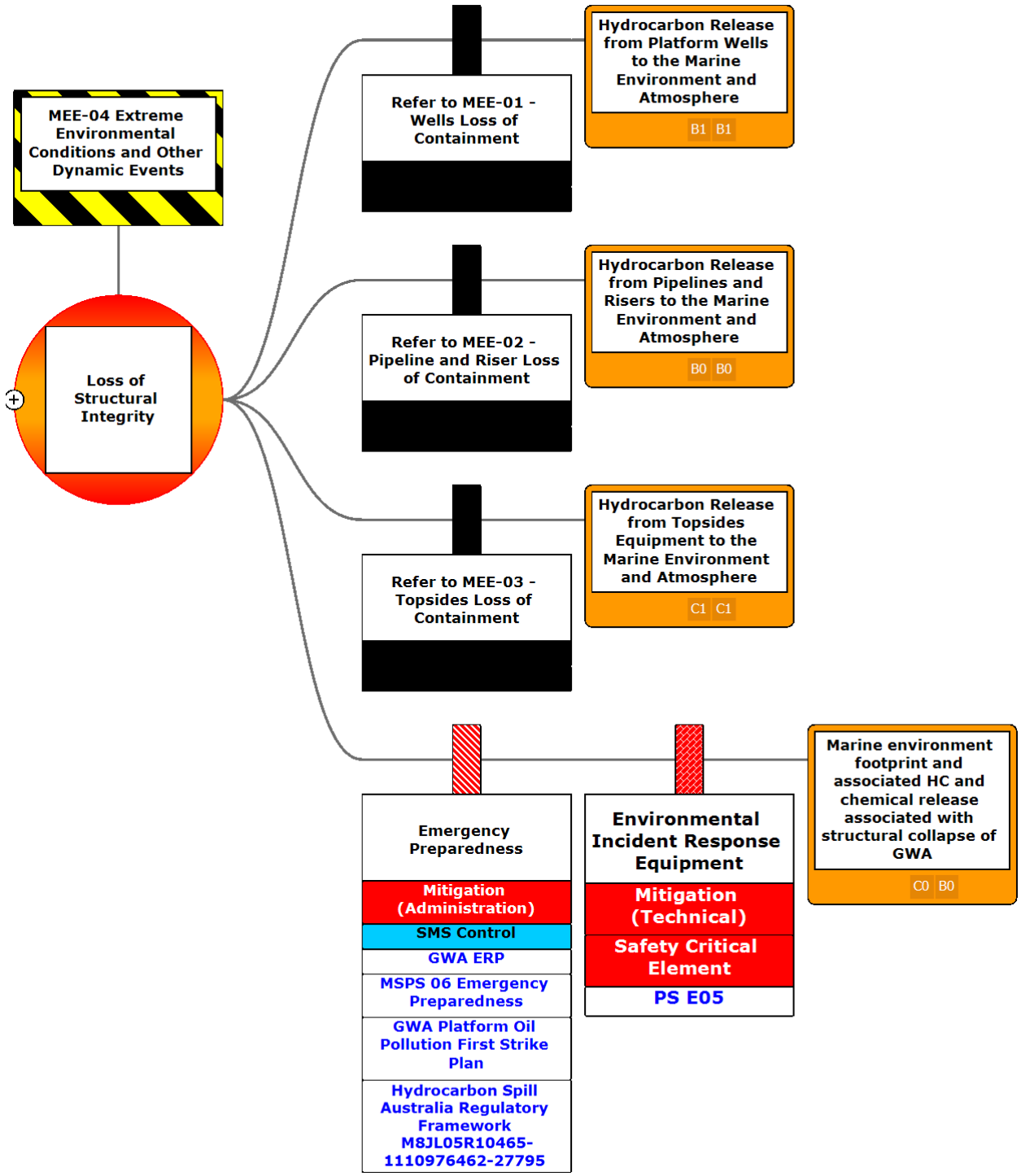


Figure 6-27: MEE-04 Loss of structural integrity (outcomes)

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MEE-04 loss of structural integrity – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
Preventative barriers – safety and environmental critical elements				
Elimination Substitution	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Engineering Controls	Maintain structural integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	P07 – Topsides / Surface Structures P21 – Substructures	Prevention (Technical)	Yes **C 16.1**
Engineering Controls	Maintain control of ignition sources and fire protection to prevent loss of structural integrity.	F27 – Control of Ignition Sources F14 – Fire Water System F20 – Passive Fire and Explosion Protection	Prevention (Technical)	Yes **C 16.2**
Engineering Controls	Maintain topsides hydrocarbon-containing infrastructure integrity to prevent loss of structural integrity.	P01 – Pressure Vessels P02 – Heat Exchangers P03 – Rotating Equipment P04 – Tanks P08 – Piping Systems	Prevention (Technical)	Yes **C 16.3**
Mitigating barrier – safety and environmental critical elements				
Engineering Controls	Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE	F06 – Safety Instrumented System P10 – Wells	Reduction/ Control (Technical)	Yes **C 13.4**
Emergency Response	Maintain environmental incident response equipment to enact the GWA Facility Operations First Strike Plan.	E05 – Environmental Incident Response Equipment	Mitigation (Technical)	Yes **C 13.5**
Legislation codes and standards				
Procedures and Administration	OPGGS (Resource Management and Administration) Regulations 2025: Accepted Well Operations Management Plan (WOMP) to demonstrate that the risks to well integrity are managed in accordance with sound engineering principles, standards, specifications, and good oilfield practice. It describes the systems in place to ensure well design and	GWA Well Operations Management Plan (WOMP)	Prevention/ Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 13.6**

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MEE-04 loss of structural integrity – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
	integrity is managed for the well lifecycle, thus contributing to management of associated potential environmental consequences of well integrity events.			
	OPGGS (Safety) Regulations 2009: Accepted Safety Case for the facility to: • identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, thus contributing to management of associated potential environmental consequences of MAEs.	GWA Safety Case	Prevention/ Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 13.7**
Procedures and Administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure.	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**
Management system specific measures: key standards or procedures				
Procedures and Administration	Implementing management systems to maintain: • M02 Operating Practices • M03 Maintenance and Inspections	MSPS-02 Operating Practices MSPS-03 Maintenance and Inspections	Prevention (Administration)	Yes – See Section 7.2.9 (Implementation Strategy)

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MEE-04 loss of structural integrity – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
Procedures and administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**
Emergency Response and Contingency Planning	Implementing management systems to maintain: • M06 – Emergency preparedness • GWA Emergency Response Plan • GWA Facility Operations Oil Pollution First Strike Plan • Hydrocarbon Spill Australia Regulatory Framework[93]	MSPS M06 – Emergency preparedness GWA Emergency Response Plan GWA Facility Operations Oil Pollution First Strike Plan Hydrocarbon Spill Australia Regulatory Framework	Mitigation (Administration)	Yes Section 7.2.9 Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.
Risk based analysis				
For risks identified as MEEs, a detailed risk based bowtie analysis (as outlined in Section 2.5.3) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event. Application of Woodside's Risk Management Procedures and implementation of the NWS Pipelines and GWA Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • ongoing hazard identification, risk assessment and the identification of control measures: and • ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g. inspection, maintenance, testing and monitoring requirements) to ensure technical integrity. Bowtie analysis was undertaken to assess MEE-04; refer to Figure 6-25, Figure 6-26and Figure 6-27 for bowtie diagrams. A quantitative spill risk assessment was undertaken (refer Section 6.8.2 for details of the method used).				
Company Values				
Refer to company values in demonstration of ALARP for MEE-01 (Section 6.8.3).				

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MEE-04 loss of structural integrity – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
Societal values				
Refer to societal values in demonstration of ALARP for MEE-01 (Section 6.8.3).				

ALARP statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a remote likelihood unplanned hydrocarbon release as a result of a loss of structural integrity.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of pipeline and riser integrity and ensuring the systems are operated within their design envelope through operating practices and assurance through maintenance and inspection. If hydrocarbon loss of containment occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the GWA Safety Case(s), SCE management procedures including technical performance standards for Safety Critical Elements (SCEs) and Management System Performance Standards (MSPS) for Safety Critical Procedures.

The application of Woodside Risk Management Procedures, and implementation of the NWS Pipelines and GWA Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures; and
- ongoing integrity management of hardware control measures in accordance with SCE Technical Performance Standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, it is considered that MEE risk associated with Loss of Structural Integrity at GWA is managed to ALARP.

MEE-04 loss of structural integrity – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The consequence assessment has considered the relevant principles of ESD: • the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • the principle of inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A)	The predicted level of risk to ecosystems, species, habitat or physical or biological attributes from a loss of structural integrity is considered to be of an acceptable level (consequence level, M - Moderate), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant WHPs, AMPs, recovery plans • the predicted level of risk has been reduced to ALARP. ***Environmental performance consideration***

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MEE-04 loss of structural integrity – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
External Context Woodside has considered feedback from relevant persons during the consequence assessment (Section 5). ***Other Requirements*** The EMBA overlaps BIAs for threatened and migratory species, as well as State and Commonwealth marine protected areas. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. As demonstrated in Section 6.10, the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans.	To manage a loss of structural integrity to ecosystems, species, habitat or physical or biological attributes to an acceptable level the following EPO has been applied: **EPO 16:** No release of hydrocarbons to the marine environment due to loss of structural integrity. The adopted controls are considered appropriate to manage the risks of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 16 No release of hydrocarbons to the marine environment from loss of structural integrity.	**C 16.1** Maintain structural integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	**PS 16.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P21 – Substructures • P07 – Topsides / Surface Structures to both; ○ provide and maintain structural integrity to support SCE systems under all design conditions through service life; and to; ○ prevent structural failure from contributing to the escalation of a MEE by providing support/protection of SCE systems during an emergency event, and/or support containment of environmentally hazardous material (including hazardous and closed drain caissons).	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
	C 16.2 Maintaining control of ignition sources and fire protection to prevent loss of structural integrity.	**PS 16.2** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F27 – Control of Ignition Sources to: ○ prevent ignition of flammable or explosive atmospheres within identified Hazardous Areas. • F20 – Passive Fire and Explosion Protection to: ○ mitigate the effects of a fire or explosion by maintaining the integrity of critical structure and equipment and limiting the potential for escalation.	**MC 1.11.1** Refer to Section 6.7.1
	C 16.3 Maintaining topsides hydrocarbon-containing infrastructure integrity.	**PS 16.3** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P01 – Pressure Vessels • P02 – Heat Exchangers • P03 – Rotating Equipment • P04 – Tanks • P08 – Piping Systems, to together provide minimum required mechanical integrity for identified SCE systems (piping, heat exchangers, rotating equipment and pressure vessels) for operation within defined integrity limits to prevent a loss of containment that may result in a MEE.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.4 Maintain Safety Instrumented System (Safety Instrumented Functions and ESD actions) to detect and respond to pre-defined initiating conditions and/or initiate responses that put the process plant, equipment, and the wells in a safe condition so as to prevent or mitigate the effects of a MEE.	**PS 13.4** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.5 Maintaining environmental incident response equipment to	**PS 13.5** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
	implement initial response to enact the Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan.		
	C 13.6 OPGGS (Resource Management and Administration) Regulations 2025: Accepted WOMP.	**PS 13.6** Refer to Section 6.8.3	**MC 13.6.1** Refer to Section 6.8.3
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** Refer to Section 6.8.3	**MC 13.7.1** Refer to Section 6.8.3
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3
	Mitigation – hydrocarbon spill response	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

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6.8.7 Unplanned hydrocarbon release: loss of marine vessel separation (MEE-05)

Context		
Facility layout and description – Section 3.5 Hydrocarbon inventories – Section 3.6.9 Vessels – Section 3.8	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key Ecological Features – Section 4.7 Protected places – Section 4.8 Socio-economic– Section 4.10	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems / habitat	Species	Socio-economic	Decision type	Consequence / impact	Likelihood	Risk rating	ALARP tool	Acceptability	Outcome
Hydrocarbon release from platform well to the marine environment and atmosphere.	✓	✓	✓	✓	✓	✓	B	B	1	M	LCS RBA CV SV	Acceptable, if ALARP	EPO 17
Hydrocarbon release from pipeline and riser to the marine environment and atmosphere.	✓	✓	✓	✓	✓	✓		B	0				
Hydrocarbon release from topsides equipment to the marine environment and atmosphere.		✓	✓	✓	✓	✓		C	1				
Marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of GWA.	✓	✓	✓	✓	✓	✓		C	0				
Loss of marine diesel from a vessel	✓	✓	✓	✓	✓	✓		C	0				

Description of source of risk

A loss of marine vessel separation between a vessel and the GWA platform may result in a loss of hydrocarbon containment from the GWA platform and / or the release of fuel from the vessel. A vessel collision with the GWA platform has been identified as a potential MEE (MEE-05). Vessel collisions can arise from:

- visiting vessel collisions associated with platform support vessels - ships which are visiting the platform can accidentally collide with the platform during approach to, or manoeuvring alongside, the platform
- errant passing vessel collision - ships which are not visiting the platform (i.e. passing vessels) can, for one reason or another, move off-course and collide with the platform
- vessel operations during adverse weather.

The different collision hazards involve significantly different sized vessels and collision speeds, hence, differing impact energies and consequences, and have been assessed.

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Visiting vessels

Visiting vessels are defined as those which are routinely used to service the GWA facility which include platform support vessels, subsea support vessels and accommodation support vessels. Operating procedures will dictate how vessels are operated, loaded and unloaded, but it will generally occur so that the prevailing winds move the vessel away from the facility. The primary causes of visiting vessel collisions are failure to follow safe procedures and communication errors between the marine vessels and platform operations. These errors could be worsened by the following:

- vessel station keeping failures; or
- vessel operations in adverse weather conditions.

A number of common failure causes due to human error and SCE failures are presented in the generic Human Error and SCE failure bowties in Section 6.8.9.

Errant passing vessels

Errant passing vessels are defined as third-party vessels that enter the platform's 500 m PSZ, but do not call at GWA or other installations (i.e. not platform or subsea support vessels). The collision can be powered or drifting. Either has the potential to cause significant damage to the riser platform.

The causes of errant passing vessel collisions include:

- failure of propulsion or steering systems
- adverse weather conditions resulting in poor visibility
- rough seas
- human error.

Woodside implement a range of control measures to mitigate the risk of errant vessel collision. In addition to the potential for large hydrocarbon releases following impact by a vessel with the GWA structure, powered collisions from large passing vessels or tankers could have sufficient impact energy to breach both skins of the vessel to the extent that there is a loss of containment of cargo or fuel oil with the potential for significant loss of inventory and consequent environmental impact.

Errant MODU collision

An errant MODU is a drilling unit that has a broken/failed mooring system and is drifting uncontrolled in the ocean. It may be a MODU contracted to Woodside, drilling in the area proximate to GWA, or a unit contracted to a third party. High energy weather events such as cyclones, while a MODU is on station, can lead to excessive loads on the mooring lines resulting in failure (either anchor(s) dragging or mooring lines parting). A failure of mooring integrity may lead to the mooring lines and anchors attached to the MODU being trailed across the seabed. If mooring failure is sufficient, the MODU may move off station, increasing the likelihood of collision with other assets or infrastructure.

For a moored MODU, personnel from the MODU are typically evacuated during cyclones (and hence response capabilities in the event of a mooring failure may be limited). Woodside, for example, implements a risk-based assessment process to aid in decision making for cyclone evacuations, with the well suspended prior to MODU evacuation. Operational experience indicates cyclone evacuations typically last for seven days.

Note that single and double mooring line failures do not typically result in the loss of station keeping. In the event of partial or complete mooring failures that are sufficient to result in a loss of station keeping, industry experience indicates that MODUs may drift considerable distances from their initial position (Offshore: Risk & Technology Consulting Inc. 2002). Partial mooring failures leading to a loss of station keeping resulted in smaller MODU displacements due to the remaining anchors dragging along the seabed when compared to complete mooring failures; complete mooring failures resulted in a freely drifting MODU (Offshore: Risk & Technology Consulting Inc. 2002). NOPSEMA has recorded four cases of anchor drag due to loss of MODU holding station during cyclone activity between 2004 and 2015 (NOPSEMA 2015).

Vessel Collision

A collision between a subsea support vessel with a third party vessel (i.e. commercial shipping, other petroleum related vessels and commercial fishing vessels) was considered the only credible event that could release a significant quantity of marine diesel to the environment. This was assessed as being credible but highly unlikely, given:

- the PSVs typically operate in the Operational Area
- the presence of subsea vessels in the Operational Area is typically temporary (e.g. while undertaking IMMR activities)
- vessels undertaking the Petroleum Activities typically operate at low speeds or are stationary
- the standard vessel operations and equipment in place to prevent collision at sea
- the construction and placement of storage tanks.

Typically, the MEE register associated with operations sits with the asset and aligns with the asset safety case to ensure appropriate coverage and risk management for the duration of facility operations.

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The largest individual tank of a vessel within the Operations Area is 1000 m^3 on an installation vessel (HLV). As such, the worst-case credible spill of marine diesel from a vessel is considered to be an instantaneous loss of the content of a 1000 m^3 tank.

Loss of Vessel Separation – Credible Hydrocarbon Spill Scenario

The loss of marine vessel separation is considered a Major Environment Event (MEE-05). The hazards associated with this MEE is hydrocarbons in platform wells, pipelines, process and non-process inventories and potentially vessels, wellheads, and fuel onboard platform support vessels. A loss of marine vessel separation could result in a significant release of hydrocarbons and credible spill scenarios consistent with:

- Well Loss of Containment (MEE-01, Section 6.8.3)
- Subsea Loss of Containment (MEE-02, Section 6.8.4)
- Topsides Loss of Containment (MEE-03, Section 6.8.5)
- Loss of Structural Integrity (MEE-04, Section 6.8.6).

In addition, vessel cargo, including diesel inventory, could be spilled if the cause of the loss of platform integrity was a collision from a support vessel.

Worst case hydrocarbon release scenarios for platform loss of well containment (MEE-01), subsea loss of containment (MEE-02) and topsides loss of containment (MEE-03) that could result from loss of marine vessel separation are discussed in the relevant sections referenced above. Relevant trajectory modelling as applicable to these scenarios is also discussed above.

A loss of vessel separation may lead to the accidental release of marine diesel from the fuel tanks on the vessel(s) involved. For a vessel collision to result in the worst-case scenario of a hydrocarbon spill potentially impacting an environmental receptor, several factors must align as follows:

- vessel interaction must result in a collision
- the collision must have enough force to penetrate the vessel hull
- the collision must be in the exact location of the fuel tank
- the fuel tank must be full, or at least of volume which is higher than the point of penetration.

The probability of the chain of events described above aligning, to result in a breach of fuel tanks resulting in a spill that could potentially affect the marine environment is considered highly unlikely. Although the Operational Area overlaps Unnamed Shoal, vessel grounding associated with the Petroleum Activity is not considered a credible risk given the water depths involved, the charted nature of the feature and the vessel management controls implemented for offshore operations.

Decision type, risk analysis and ALARP tools

Woodside has not experienced any loss of marine vessel separation events that have resulted in significant environmental impacts. The facility has never experienced a worst-case loss of containment due to loss of vessel separation in its operational history.

Decision type

A decision type ‘B’ has been applied to this risk under the Guidance on Risk Related Decision Making (OEUK 2025). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk-based tools including the bowtie methodology (described in Section 2.5.3) and hydrocarbon spill trajectory modelling. Company and societal values were also considered in the demonstration of ALARP and acceptability, through peer review, benchmarking and stakeholder consultation.

Quantitative spill risk assessment

Modelling was undertaken by RPS Group (2019), on behalf of Woodside, to determine the fate of marine diesel released from a collision at a location within the Operational Area. The modelling assessed the extent of marine diesel spill volume of 1000 m^3 (largest fuel tank on installation vessel) for all seasons, using an historic sample of wind and current data for the region.

Refer to Section 6.8.2 for additional information on modelling methods and environmental impact, thresholds and hydrocarbon characteristics justifications.

Likelihood

In accordance with the Woodside Risk Matrix (Section 2.6), the following likelihoods have been assigned to the sources of risk:

- hydrocarbon release from platform well to the marine environment and atmosphere: highly unlikely
- hydrocarbon release from pipeline and riser to the marine environment and atmosphere: remote
- hydrocarbon release from topsides equipment to the marine environment and atmosphere: highly unlikely
- marine environment footprint and associated hydrocarbon and chemical release associated with structural collapse of GWA: remote

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- loss of marine diesel from a vessel: remote

Consequence

The spatial extent and fate (incl. weathering) of the spilled hydrocarbon from the GWA facility and vessels were considered during the impact assessment for a worst-case loss of marine vessel separation. These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill (Section 6.8.2) and relevant literature and studies considering the effects of hydrocarbon exposure.

Consequence assessment

Environment that may be affected

The potential impacts from hydrocarbon release caused by a loss of structural integrity are those which would result from:

- well loss of containment, Section 6.8.3 (MEE-01)
- subsea loss of containment, Section 6.8.4 (MEE-02)
- topsides loss of containment, Section 6.8.5 (MEE-03)
- loss of structural integrity, Section 6.8.6 (MEE-04).

The potential impacts are therefore discussed in the above mentioned sections.

Potential impacts for the credible worst-case diesel spill from a vessel (1,000 m^3) is discussed below.

Surface hydrocarbons (impact threshold -10 g/m^2)

The probability contour figures for floating hydrocarbons indicate that concentrations equal to or greater than the 10 g/m^2 thresholds could potentially be found, in the form of slicks, up to 54 km from the spill site. Floating hydrocarbons at concentrations equal to or greater than 10 g/m^2 is not forecast to contact any of the assessed shoreline receptors.

Entrained hydrocarbons (impact threshold - 1000 ppb)

Entrained oil at concentrations equal to or greater than the 1000 ppb threshold are predicted to be found up to around 245 km from the spill site. Contact by entrained hydrocarbons at concentrations equal to or greater than 1000 ppb is predicted at Montebello MP (9%) as well as a few other sensitive receptors with probabilities of equal to or less than 0.5%.

Dissolved hydrocarbons (impact threshold – 10 ppb)

Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 10 ppb threshold are predicted to found 433 km from the spill site.

Accumulated hydrocarbons (shoreline oil) (impact threshold -100 g/m^2)

No receptor is predicted to be contacted by shoreline oil at concentrations equal or greater than 100 g/m^2.

Consequence assessment summary

The credible worst-case hydrocarbon spill scenarios that may arise from a 1,000 m^3 may impact upon a range of receptors identified by the stochastic spill modelling studies (RPS Group 2019). Potential impacts of a hydrocarbon spill to these receptors are considered in MEE-01; refer to Section 6.8.3 for a description of potential impacts.

The credible worst-case hydrocarbon volumes that can credibly be released by MEE-05 are significantly smaller than the credible worst-case loss of well containment volumes considered in MEE-01 (Section 6.8.3). Additionally, the credible release durations are significantly shorter.

Summary of potential consequences to environmental value(s)

The modelling conducted for a loss of marine vessel separation provides conservative insight into the consequences of a similar release at GWA. The extent of impacts does not exceed the EMBA defined by the work case release from GWA, which is the well loss of containment (MEE-01). Receptors that may be impacted by the MEE-05 spill scenario are listed within the broader list of receptors for MEE-01, presented in Section 6.8.3. Potential impacts of a hydrocarbon spill to the open water environment and receptors have been assessed within the worst-case spill scenario, MEE-01; refer to Section 6.8.3 for a description of potential impacts.

The marine diesel spill would be highly localised with minor short-term impacts to receptors within the EMBA anticipated. Impacts to water quality and air quality in the immediate location of the spill would be expected to be minor and short-term.

MEE-05 loss of marine vessel separation - risk analysis

Bowtie analysis was undertaken to assess MEE-05; refer to Figure 6-28 and Figure 6-29.

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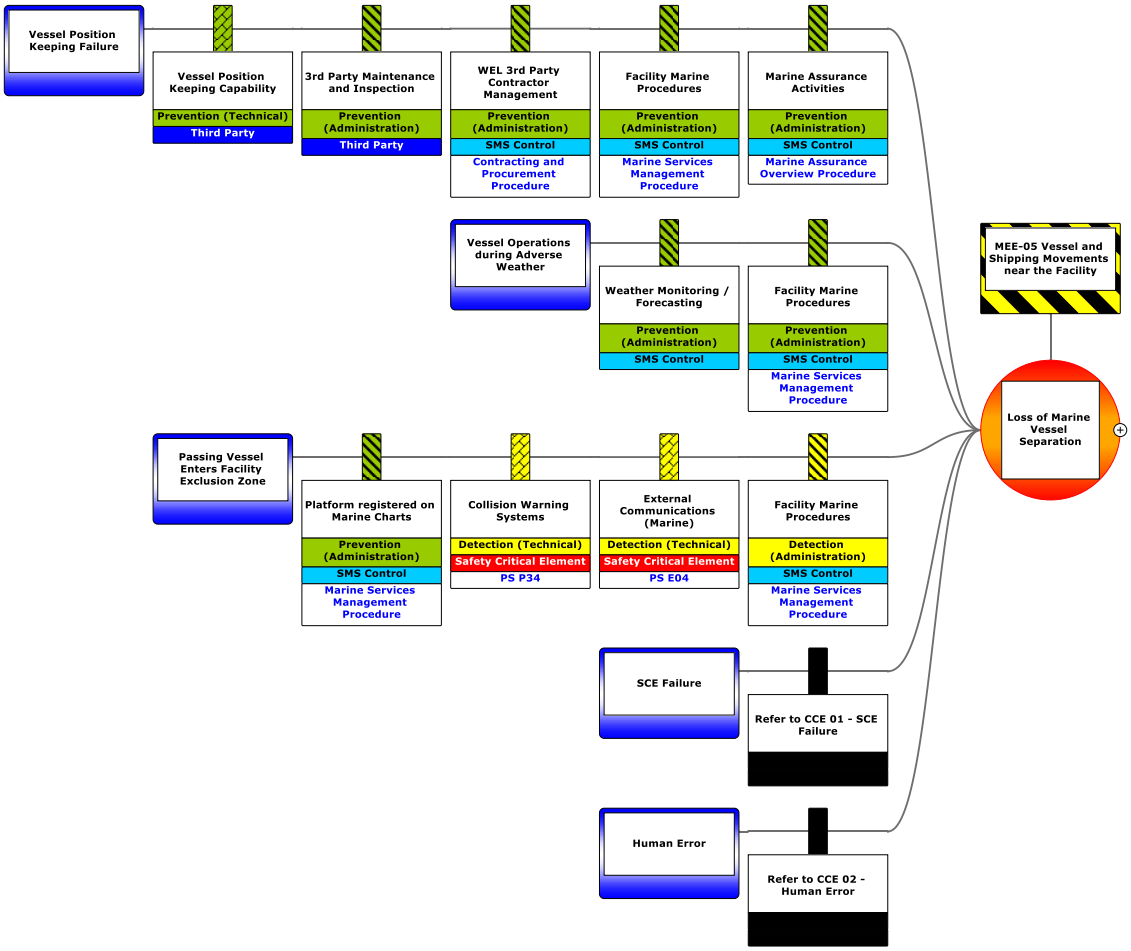


Figure 6-28: MEE-05 loss of vessel separation (causes)

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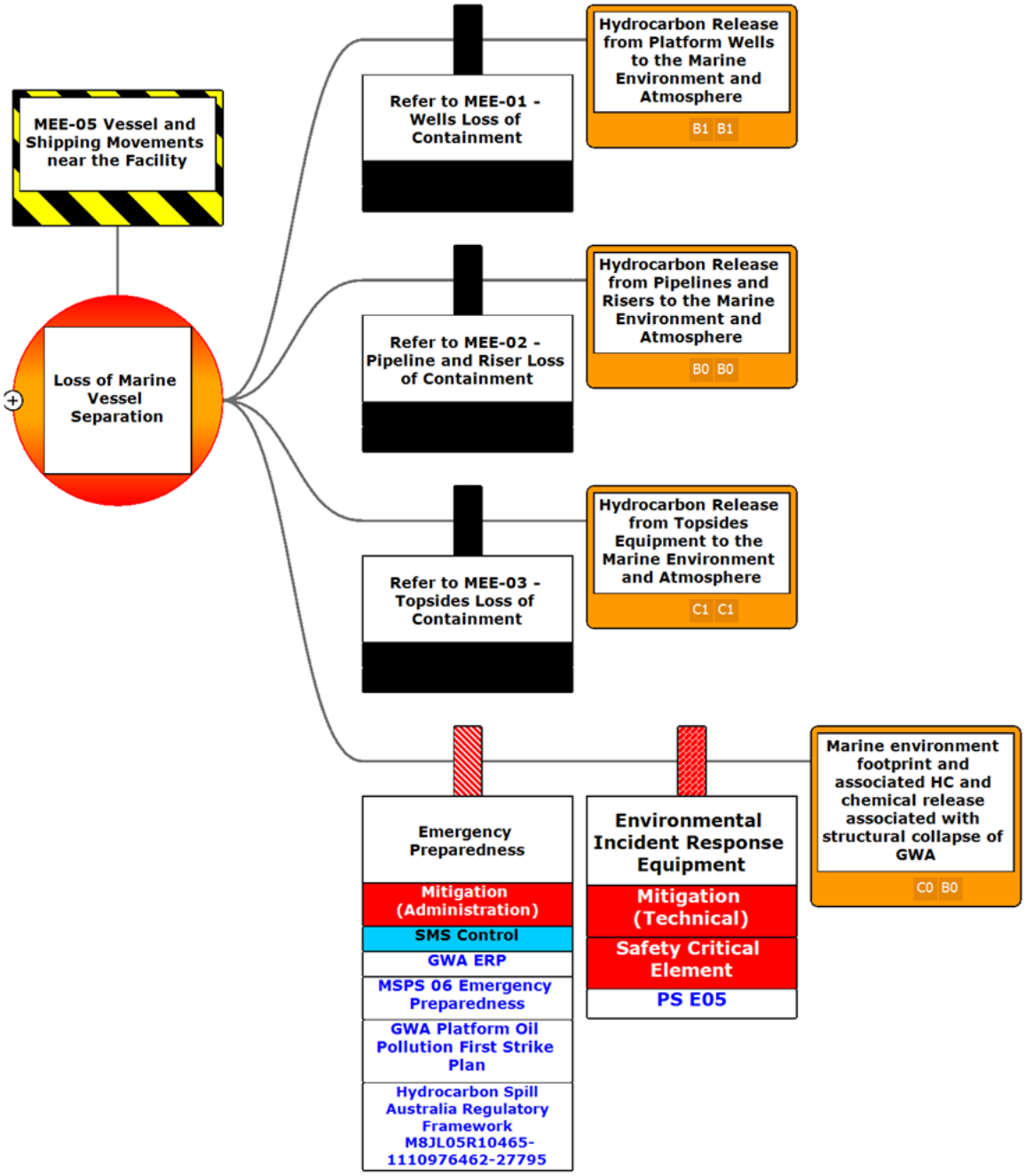


Figure 6-29: MEE-05 loss of vessel separation (outcomes)

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MEE-05 loss of marine vessel separation – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
Preventative barriers – safety and environmental critical elements				
Elimination	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Substitution				
Engineering Controls	Maintaining collision warning systems and navigational aids to alert facility of a potential collision with marine vessels, and to alert marine vessels of facility location so they may take timely action to avoid the facility and hence reduce likelihood of collision.	P34 – Collision prevention systems	Detection (Technical)	Yes **C 16.1**
Engineering Controls	Maintaining availability of critical external and internal communication systems to facilitate prevention and response to accidents and emergencies.	E04 – Safety critical communication systems	Detection (Technical)	Yes **C 13.2**
Mitigating barrier – safety and environmental critical elements				
Impact Protection	Maintaining structural integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of a MEE.	P07 – Topsides/surface structures P21 – Substructures	Mitigation (Technical)	Yes **C 17.2**
Engineering Controls (per MEE-002)	Maintain Safety Instrumented Systems (e.g. ESD and safety instrumented functions) system, Blowdown and Open Hazardous Drains system to isolate, remove and control hazardous inventories so as to mitigate the effects of a MEE/ prevent escalation to a MEE.	F06 – Safety Instrumented System F09 – Depressurisation (Blowdown) to; F22 – Open Hazardous Drains	Reduction/Control (Technical)	Yes **C 17.3**
Engineering Controls	Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	F01 – Fire and Gas Detection and Alarm Systems	Detection (Technical)	Yes **C 13.3**
Emergency Response	Maintaining environmental incident response equipment to implement initial response to enact the GWA Facility Operations Oil Pollution First Strike Plan.	E05 – Environmental incident response equipment	Mitigation (Technical)	Yes **C 13.5**
Legislation codes and standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA to:	GWA Safety Case	Prevention/ Mitigation (Administration)	Yes **C 13.7**

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MEE-05 loss of marine vessel separation – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
	• identify hazards that have the potential to cause an MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with an MAE to ALARP, thus contributing to management of associated potential environmental consequences of MAEs.			
Management system specific measures: key standards or procedures				
Procedures and Administration	Implementing management systems to maintain: • Marine Operations Standard Marine Assurance Standard • Contracting and Procurement Procedure.	Marine Operations Standard Marine Assurance Standard Contracting and Procurement Procedure	Prevention (Administration)	Yes – See Section 7.2.9 Implementation Strategy
Procedures and Administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**

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MEE-05 loss of marine vessel separation – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***
Emergency Response and Contingency Planning	Implementing management systems to maintain: • M06 – Emergency preparedness • GWA Emergency Response Plan • GWA Facility Operations Oil Pollution First Strike Plan • Hydrocarbon Spill Australia Regulatory Framework[93]	MSPS M06 – Emergency preparedness GWA Emergency Response Plan GWA Operations Oil Pollution First Strike Plan Hydrocarbon Spill Australia Regulatory Framework	Mitigation (Administration)	Yes See Section 7.2.9 Implementation Strategy Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response
Risk based analysis				
For risks identified as MEEs, a detailed risk based bowtie analysis (as outlined in Section 2.5.3) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event. Application of Woodside's Risk Management Procedures and implementation of the GWA and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • ongoing hazard identification, risk assessment and the identification of control measures • ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g. inspection, maintenance, testing and monitoring requirements) to ensure technical integrity. Bowtie analysis was undertaken to assess MEE-02; refer to Figure 6-28 and Figure 6-29 for bowtie diagrams. A quantitative spill risk assessment was undertaken (refer Section 6.8.2 for details of the method used).				
Company values				
Refer to company values in demonstration of ALARP for MEE-01 (Section 6.8.3).				
Societal values				
Refer to societal values in demonstration of ALARP for MEE-01 (Section 6.8.3).				

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MEE-05 loss of marine vessel separation – demonstration of ALARP ALARP control measures				
Hierarchy	***Control / barrier***	***SCE / management system reference***	***Type of effect (Refer to Table 6-24)***	***Control adopted***

ALARP statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood of a loss of marine vessel separation.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of the facility, ensuring the equipment is operated within the design envelope through operating practices, and assurance through maintenance and inspection. If a loss of marine vessel separation occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the GWA and NWS Pipelines Safety Cases, SCE management procedures including performance standards for SCEs and MSPSs for Safety Critical Management System Controls.

Application of Woodside's Risk Management Procedures and implementation of the GWA and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- ongoing hazard identification, risk assessment and the identification of control measures
- ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of facility operations, it is considered that MEE risk associated with a loss of marine vessel separation is managed to ALARP.

MEE-05 loss of marine vessel separation – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The consequence assessment has considered the relevant principles of ESD: • the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • the principle of inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) ***External Context*** Woodside has considered feedback from relevant persons during the consequence assessment (Section 5).	The predicted level of risk to ecosystems, species, habitat or physical or biological attributes from a loss of marine vessel separation is considered to be of an acceptable level (consequence level, M - Moderate), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant WHPs, AMPs, recovery plans • the predicted level of risk has been reduced to ALARP. ***Environmental performance consideration*** To manage a loss of marine vessel separation to ecosystems, species, habitat or physical or biological attributes to an acceptable level the following EPO has been applied:

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MEE-05 loss of marine vessel separation – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
As requested during consultation, controls have been adopted to inform other users of the presence of the support vessels during the Petroleum Activity and reduce the potential for vessel collision, including notifications to AHO and AMSA. ***Other Requirements*** The EMBA overlaps BIAs for threatened and migratory species, as well as State and Commonwealth marine protected areas. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. As demonstrated in Section 6.10, the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans.	**EPO 17**: No release of hydrocarbons to the marine environment due to loss of marine vessel separation. The adopted controls are considered appropriate to manage the risks of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 17 No release of hydrocarbons to the marine environment due to loss of marine vessel separation associated with the Petroleum Activity.	**C 17.1** Maintaining collision warning systems and navigational aids to alert facility of a potential collision with marine vessels, and to alert marine vessels of facility location so they may take timely action to avoid the facility and hence reduce likelihood of collision.	**PS 17.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P34 – Collision prevention systems, to: o alert facility of a potential collision with marine vessels o alert marine vessels of facility location so they may take timely action to avoid the facility and hence reduce likelihood of collision.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.2 Maintaining availability of external and internal communication systems to facilitate response to accidents and emergencies.	**PS 13.2** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 17.2 Maintaining structural integrity to ensure availability of critical systems during a major accident or environment event, and prevent structural failures from contributing to escalation of a MEE.	**PS 17.2** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P21 – Substructures • P07 – Topsides/Surface Structures, to together: o provide and maintain structural integrity to support SCE	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
		systems under all design conditions through service life prevent structural failure from contributing to the escalation of a MEE by providing support/ protection of SCE systems during an emergency event, and/or support containment of environmentally hazardous material.	
	C 17.3 Maintain Safety Instrumented Systems (e.g. emergency shutdown and safety instrumented functions) system, blowdown and open hazardous drains system to isolate, remove and control hazardous inventories so as to mitigate the effects of a MEE/prevent escalation to a MEE.	**PS 17.3** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System, to: ○ detect and respond to pre-defined initiating conditions, and initiate responses that function to put the process plant, equipment, and the wells in a safe condition through appropriate isolation of hazardous inventories so as to prevent or mitigate the effects of a MEE. • F09 – Depressurisation (Blowdown), to: ○ safely depressurise the installation in order to avoid, or minimise the escalation of an uncontrolled loss of containment. • F22 – Open Hazardous Drains, to: ○ prevent escalation of an incident following loss of containment, fire and/or explosion by removing or containing flammable liquid from hazardous areas support appropriate containment and disposal of environmentally hazardous liquids to avoid damage to the environment.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.3 Maintain fire and gas detection and alarm systems on GWA to prevent and respond to fire or gas hazards.	**PS 13.3** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1
	C 13.5 Maintaining environmental incident response equipment to implement initial response to enact the Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan.	**PS 13.5** Refer to Section 6.8.3	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** Refer to Section 6.8.3	**MC 13.7.1** Refer to Section 6.8.3
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3
	Mitigation – hydrocarbon spill response	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

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6.8.8 Unplanned hydrocarbon release: loss of control of suspended load from GWA platform (MEE-06)

Context		
Lifting operations – Section 3.6.5.7 Support vessels -Section 3.8	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Key Ecological Features – Section 4.7 Protected places – Section 4.8 Socio-economic– Section 4.10	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Hydrocarbon release from subsea equipment to the marine environment and atmosphere.	✓	✓	✓	✓	✓	✓	B	C	1	M	LCS RBA CV SV	Acceptable, if ALARP	EPO 18
Hydrocarbon release from topsides equipment to the marine environment and atmosphere.		✓	✓	✓	✓	✓							

Description of source of risk

Lifting activities on GWA can take place from one of two platform cranes between supply vessels and laydown areas, or between laydown areas. Lifting operations performed using the platform or visiting vessel cranes could potentially lead to dropped objects impacting assets (topsides equipment, subsea infrastructures) inside the GWA 500 m PSZ, potentially leading to a hydrocarbon loss of containment from topsides and subsea infrastructure. Loss of control of suspended load has been identified as a MEE (MEE-06). A loss of control of suspended load may arise from:

- lifting equipment failure
- facility lifting operations
- adverse weather conditions.

A number of common failure causes due to human error and Safety Critical Equipment (SCE) failures are presented in the generic human error and SCE failure bowties in Section 6.8.9.

Loss of control of suspended load – credible hydrocarbon spill scenario

The potential outcome of a loss of control of a suspended load is a topsides and/or subsea flowlines and riser loss of containment. Refer to Section 6.8.4 (MEE-02 - subsea loss of containment) and 6.8.5 (MEE-03 - topsides loss of containment) for a description of subsea and topsides loss of containments scenarios, respectively.

Decision type, risk analysis and ALARP tools

Woodside has a good history of implementing industry standard practice in subsea system design and construction. In the company's recent history, it has not experienced any loss of suspended load events that have resulted in significant releases or significant environmental impacts.

Decision type

A decision type 'B' has been applied to this risk under the Guidance on Risk Related Decision Making (OEUK 2025). This reflects the complexity of the risk, the higher potential consequence and stakeholder implications should the event be realised. To align with this decision type, a further level of analysis has been applied using risk based tools

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including the Bowtie methodology (described in Section 2.5.3) and hydrocarbon spill trajectory modelling. Company values were also considered in the demonstration of ALARP and acceptability.

A loss of control of a suspended load is considered a MEE (MEE-06). The hazard associated with this MEE is the hydrocarbon inventory of flowlines and risers, or topsides process and non-process hydrocarbons.

Quantitative spill risk assessment

Credible worst-case hydrocarbon Scenarios 3 (MEE-02) and Scenarios 5 and 6 (MEE-03) are considered to apply to the potential loss of containment that may occur in the event of a loss of a suspended load. Refer to Section 6.8.4 (Scenario 3) and Section 6.8.5 (Scenarios 5 and 6) for a discussion of these credible worst-case spill scenarios.

Likelihood

In accordance with the Woodside Risk Matrix, given prevention and mitigation measures in place (i.e. design, inspection and maintenance), the likelihood assigned to the worst-case risk events are considered 1 (Highly Unlikely).

Consequence

The spatial extent and fate (incl. weathering) of the spilled hydrocarbons were considered during the impact assessment for a loss of control of suspended load. These considerations were informed primarily by the outputs from the numerical modelling studies undertaken by RPS, available information on environmental sensitivities that may credibly be impacted in the event of a worst-case spill, and relevant literature and studies considering the effects of hydrocarbon exposure. Refer to Section 6.8.3 (MEE-01), Section 6.8.4 (MEE-02) and Section 6.8.5 (MEE-03) for a description of the consequence potentially resulting from subsea and topsides loss of containment scenarios, respectively.

MEE-06 loss of control of suspended load from platform – risk analysis
A bowtie risk analysis was undertaken to assess MEE-06; refer to Figure 6-30 and Figure 6-31 for bowtie diagrams.

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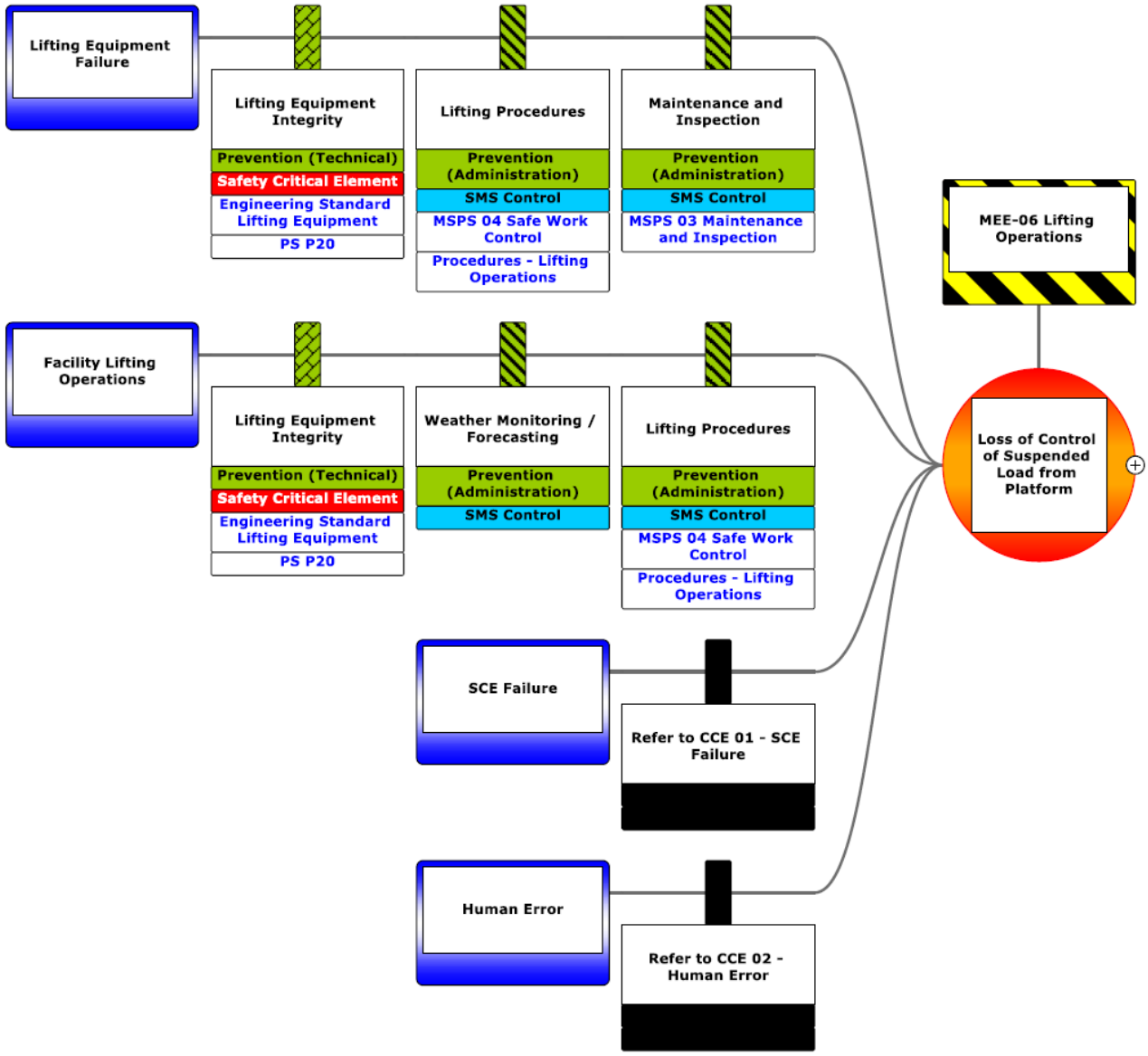


Figure 6-30: MEE-06 Loss of Control of Suspended Load from Facility Lifting Operations

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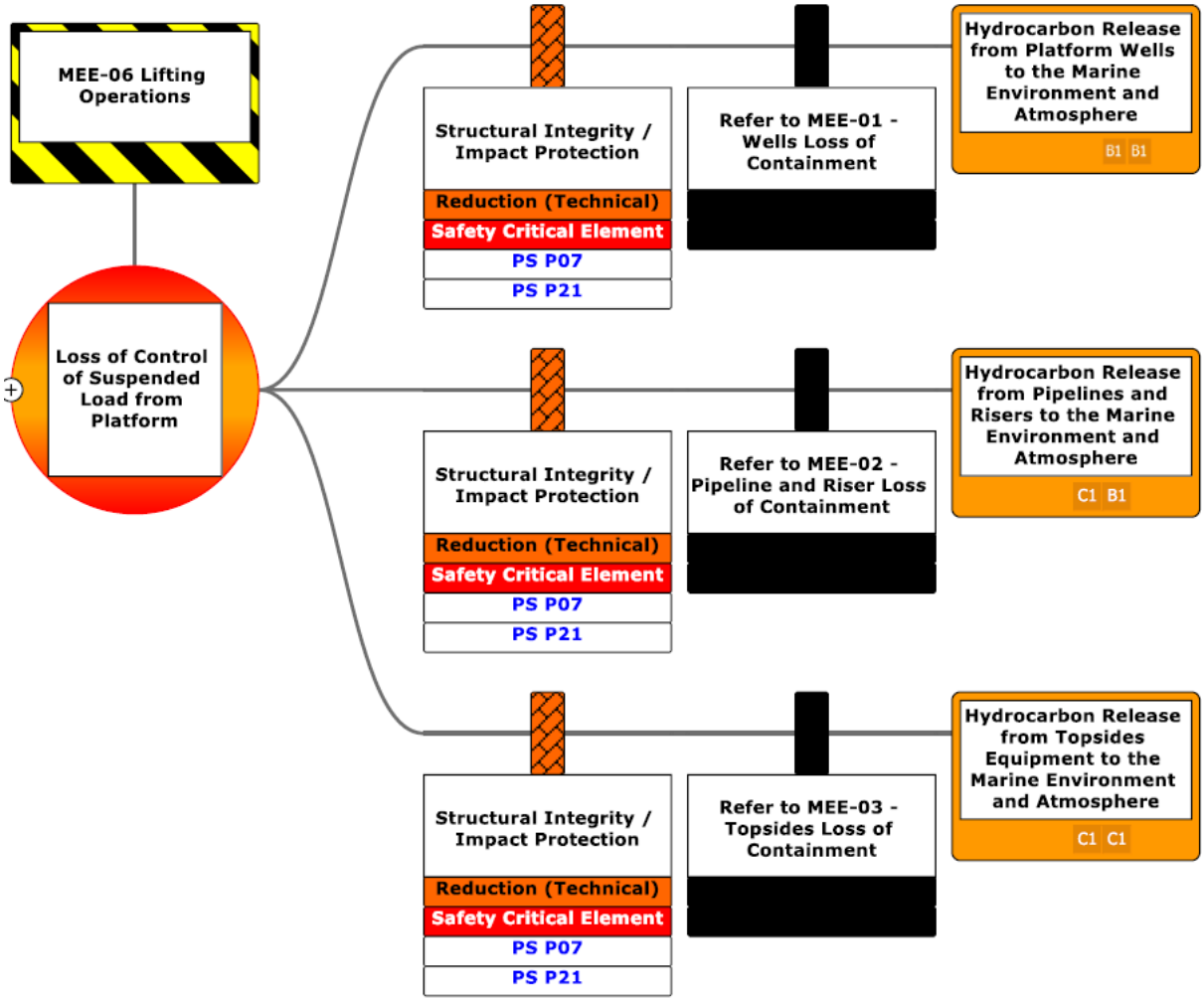


Figure 6-31: MEE-06 Loss of Control of Suspended Load from Facility Lifting Operations (Outcomes)

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MEE-06 loss of control of suspended load from platform – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
Preventative barriers – safety and environmental critical elements				
Elimination Substitution	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Engineering Controls	Maintaining platform lifting equipment to prevent platform lifting equipment failure or dropped/swinging loads that could result in a MEE.	P20 – Lifting equipment	Prevention (Technical)	Yes **C 18.1**
Mitigating barrier – safety and environmental critical elements				
Impact Protection	Maintaining structural integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	P07 – Topsides/surface structures P21 – Substructures	Mitigation (Technical)	Yes **C 16.1**
Legislation codes and standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA to; • identify hazards that have the potential to cause a MAE; • detail assessment of MAE risks; and • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with a MAE to ALARP; thus, contributing to management of associated potential environmental consequences of MAEs.	GWA Safety Case	Prevention / Mitigation (Administration) Control based on legislative requirements – must be adopted	Yes **C 13.7**
Management system specific measures: key standards or procedures				
Procedures and Administration	Implement management systems to maintain: • Engineering Standard – Lifting equipment • M03 – Maintenance and inspections • M04 – Safe work control • Procedures – Lifting Operations.	Engineering Standard Lifting Equipment MSPS M03 – Maintenance and inspections MSPS M04 – Safe work control Procedures – Lifting Operations	Mitigation (Administration)	Yes – See Section 7.2.9 Implementation Strategy

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MEE-06 loss of control of suspended load from platform – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***
Procedures and administration	Incident reports are raised for unplanned releases within event reporting system.	Woodside Health, Safety and Environment Event Reporting and Investigation Procedure	Prevention / Mitigation (Administration) Control based on Woodside standard and regulatory requirements. Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Yes **C 13.8**
Emergency Response and Contingency Planning	Implement management systems to maintain: • M06 – Emergency Preparedness • GWA Emergency Response Plan • NWS Pipelines Emergency Response Plan • GWA Facility Operations Oil Pollution First Strike Plan • Hydrocarbon Spill Australia Regulatory Framework[93]	MSPS M06 – Emergency preparedness GWA Emergency Response Plan NWS Pipelines Emergency Response Plan GWA Facility Operations Oil Pollution First Strike Plan Hydrocarbon Spill Australia Regulatory Framework	Mitigation (Administration)	Yes See Section 7.2.9 Implementation Strategy Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response
Risk based analysis				
For risks identified as MEEs, a detailed risk based Bowtie Analysis (as outlined in Section 2.5.3) has been used to identify, analyse and demonstrate that controls in place reduce the risk associated with each MEE to ALARP. Controls have been selected following hierarchy of control principles and consider independence of each barrier and their type of effect in controlling the hazardous event. Application of Woodside Risk Management Procedures, and implementation of the WOMP, GWA and NWS Pipelines Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes: • ongoing hazard identification, risk assessment and the identification of control measures • ongoing integrity management of hardware control measures in accordance with the operational performance standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability. For each SCE, detailed requirements for equipment functionality, availability, reliability and survivability are incorporated into SCE Performance Standards which also include the relevant assurance tasks (e.g. inspection, maintenance, testing and monitoring requirements) to ensure technical integrity. A bowtie analysis was undertaken to assess MEE-06, refer to Figure 6-30 and Figure 6-31 and for bowtie diagrams. A quantitative spill risk assessment was undertaken (refer Section 6.8.2 for details of the method used).				
Company values				
Refer to company values in demonstration of ALARP for MEE-01 (Section 6.8.3).				
Societal values				
Refer to societal values in demonstration of ALARP for MEE-01 (Section 6.8.3).				

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MEE-06 loss of control of suspended load from platform – demonstration of ALARP ALARP control measures				
Hierarchy	***Control/barrier***	***SCE/management system reference***	***Type of effect (refer to Table 6-24)***	***Control adopted***

ALARP statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the impacts and risks of a very low likelihood of a loss of control of suspended loads.

The principle of inherent safety and environmental protection is based on the prevention of the MEE through design of the facility, ensuring the equipment is operated within the design envelope through operating practices, and assurance through maintenance and inspection. If a loss of control of suspended load occurs, mitigation measures are in place to minimise the consequence by limiting the inventory which can be released and implementing remediation.

The controls in place for prevention and mitigation of MEEs are specified and assured through implementing the GWA Safety Case(s), SCE management procedures including technical performance standards for Safety Critical Elements (SCEs) and Management System Performance Standards (MSPS) for Safety Critical Procedures.

The application of Woodside Risk Management Procedures, and implementation of the WOMP, NWS Pipelines and GWA Safety Cases ensures the continuous identification of hazards, systematic assessment of risks and ongoing assessment of alternative control measures to reduce risk to ALARP, which includes:

- Ongoing hazard identification, risk assessment and the identification of control measures; and
- Ongoing integrity management of hardware control measures in accordance with the SCE Technical Performance Standards which define requirements to be suitably maintained, such that they retain effectiveness, functionality, availability and survivability.

Given the controls in place to prevent and control loss of containment events and mitigate their consequences, alongside procedural control of facility operations, it is considered that MEE risk associated with a loss of control of suspended load is managed to ALARP.

MEE-06 loss of control of suspended load – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
Principles of ESD The consequence assessment has considered the relevant principles of ESD: • The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. • The principle of inter-generational equity – the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. • Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. ***Internal Context*** The Petroleum Activity is consistent with Woodside corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and Environmental Performance Outcomes, including: • Woodside Health, Safety and Environment Policy (Appendix A) • Woodside Risk Management Policy (Appendix A) ***External Context*** Woodside has considered feedback from relevant persons during the consequence assessment (Section 5). ***Other Requirements***	The predicted level of risk to ecosystems, species, habitat or physical or biological attributes from a loss of control of suspended load is considered to be of an acceptable level (consequence level, M - Moderate), given that: • the Petroleum Activity is consistent with the relevant principles of ESD • the proposed controls have considered the environmental consequence and are consistent with Woodside's internal policies, procedures and standards • feedback from stakeholders has been taken into consideration • legislative requirements/industry standards have been adopted • the Petroleum Activity will be managed in a manner that is not inconsistent with management objectives for relevant WHPs, AMPs, recovery plans • the predicted level of risk has been reduced to ALARP. ***Environmental performance consideration*** To manage a loss of control of suspended load to ecosystems, species, habitat or physical or biological attributes to an acceptable level the following EPO has been applied:

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MEE-06 loss of control of suspended load – demonstration of acceptability	
Acceptability criteria and assessment	***Statement of acceptability***
The EMBA overlaps BIAs for threatened and migratory species, as well as State and Commonwealth marine protected areas. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts. As demonstrated in Section 6.10, the Petroleum Activity is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans.	**EPO 18**: No release of hydrocarbons to the marine environment due to loss of control of suspended load. The adopted controls are considered appropriate to manage the risks of the Petroleum Activity and compliance with those controls is considered to demonstrate that the EPOs have been met.

EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 18 No release of hydrocarbons to the marine environment due to loss of control of suspended load from platform associated with the Petroleum Activity	**C 18.1** Maintaining platform lifting equipment to prevent platform lifting equipment failure or dropped/swinging loads that could result in a MEE.	**PS 18.1** Integrity will be managed in accordance with SCE Management Procedures (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P20 – Lifting equipment, to: ○ prevent platform lifting equipment failure or dropped/swinging loads that could result in a MEE by maintaining lifting equipment integrity.	**MC 1.11.1** Refer to Section 6.7.1
	C 16.1 Maintain structural integrity to ensure availability of critical systems during a major accident or environment event and prevent structural failures from contributing to escalation of a MEE.	**PS 16.1** Refer to Section 6.8.6	**MC 1.11.1** Refer to Section 6.7.1
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** Refer to Section 6.8.3	**MC 13.7.1** Refer to Section 6.8.3
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3
	Mitigation – hydrocarbon spill response	Refer to Appendix G or discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

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6.8.9 MEE common cause event failure mechanisms: SCE failure CCE-01 and human error CCE-02

This section presents common mode failure causes and controls applicable across MEEs, which are also observed within the bowties of the MEE's discussed within sections above. Controls, EPSs and MCs presented within this section are also considered relevant to MEE-01 to MEE-06.

GWA: Major Environmental Datasheet	
MEE Number	All
Hazard Description	Generic SCE failure (CCE-01)
Hazard Ref ID	N/A
Hazard Description	
Hazard Overview and Scope	
There are a number of causes which contribute to failures of SCEs and other systems which might protect against a MEE. These include: • maintenance errors • defects • electrical supply failure • hydraulic supply failure • adverse environmental conditions. The generic SCE failure bowties illustrate the causes and outcomes, and the controls in place to manage these failure mechanisms.	

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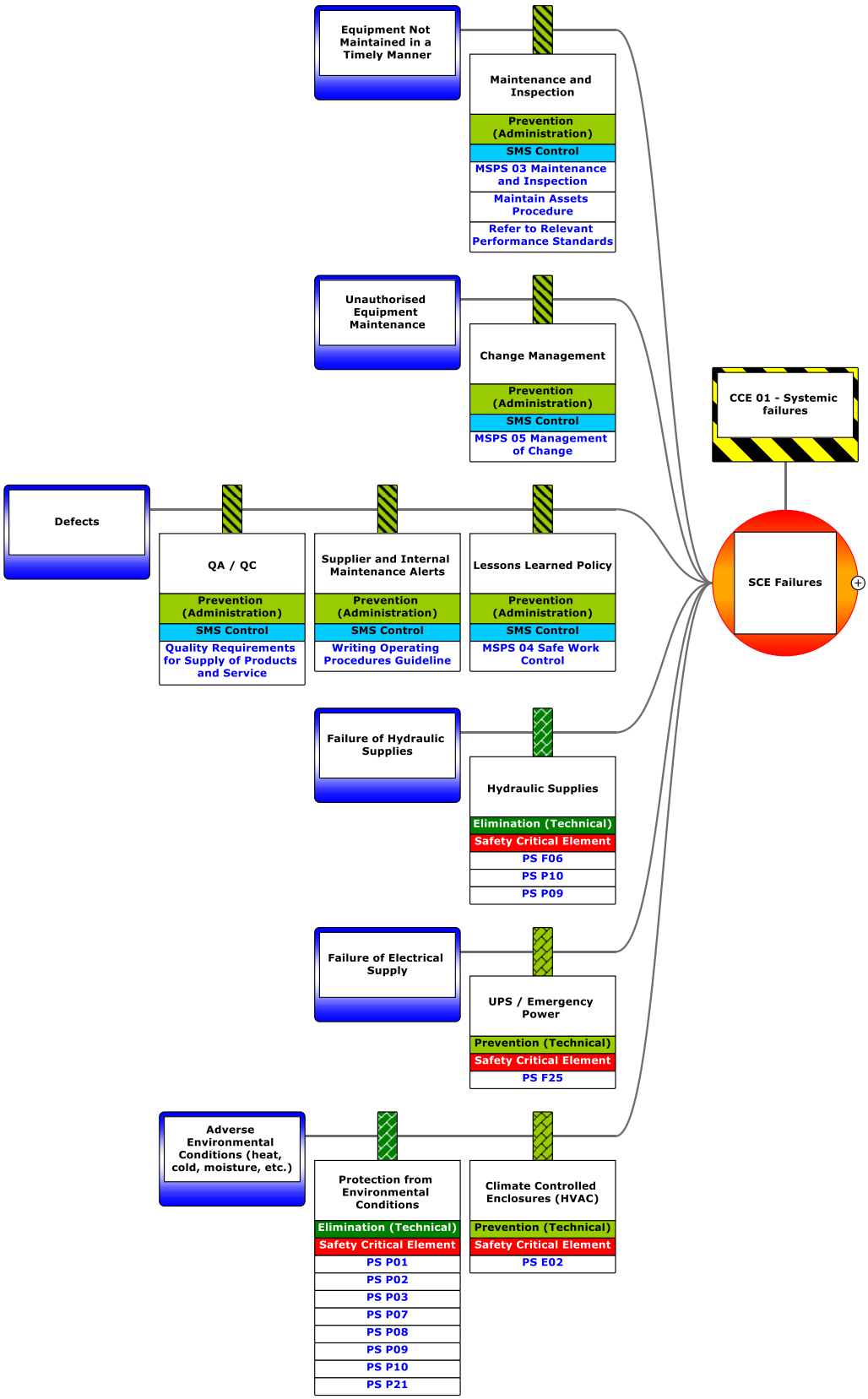


Figure 6-32: Generic SCE failure bowtie (causes)

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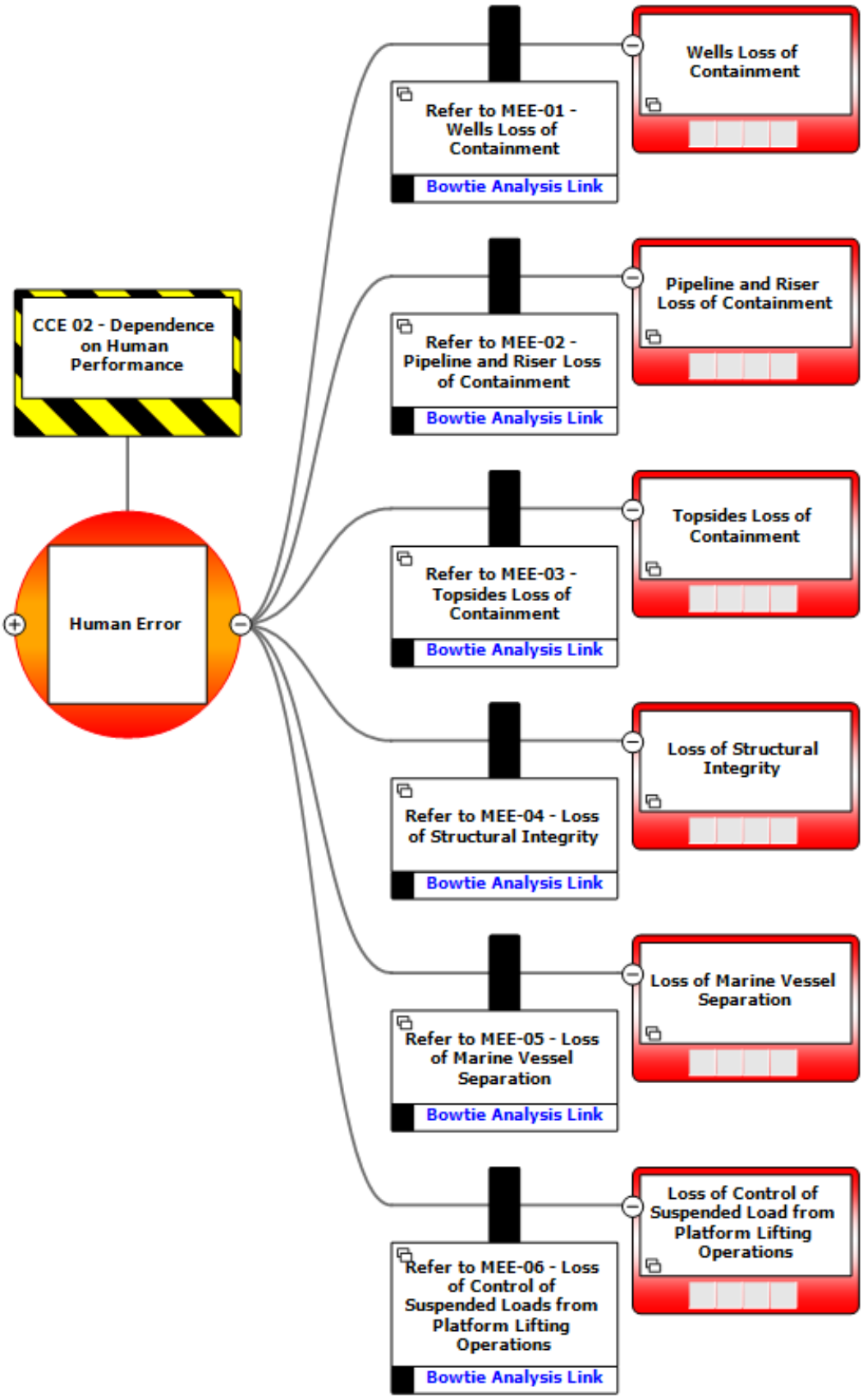


Figure 6-33: Generic SCE failure bowtie (Outcomes)

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CCE-01 Safety Critical Equipment Failure Risk Analysis and Demonstration of ALARP ALARP Control Measures				
Hierarchy	***Control/barrier***	***SCE/Management System reference***	***Type of effect (refer to Table 6-24)***	***Control Adopted***
Preventative Barriers – Safety and Environmental Critical Elements				
Elimination	Maintain hydraulic supplies (e.g. to support Safety Instrumented Systems and actuation of SCE valves/isolations).	F06 – Safety Instrumented System	Elimination (Technical)	Yes **C 19.1**
	Maintain protection from environmental conditions.	P01 – Pressure Vessels P02 – Heat Exchanger P03 – Rotating Equipment P07 – Topsides / Surface Structures P08 – Piping Systems P09 – Pipeline Systems P10 – Wells P21 – Substructures	Elimination (Technical)	Yes **C 19.2**
Substitution	N/A.	No elimination or substitution controls were identified beyond those incorporated in design.		
Engineering Controls	Maintain UPS/emergency power system to supply essential safety systems.	F25 – UPS/Emergency Power	Prevention (Technical)	Yes **C 19.3**
	Maintain climate controlled enclosures to protect essential equipment from adverse environmental conditions.	E02 – Safety Critical Buildings	Prevention (Technical)	Yes **C 19.4**
Mitigating Barrier – Safety and Environmental Critical Elements				
Mitigation	N/A.	No mitigation controls were identified beyond those incorporated in design.		
Legislation Codes and Standards				
Procedures and Administration	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility to: • identify hazards that have the potential to cause a MAE • detail assessment of MAE risks • describe the physical barriers SCEs and the safety management systems identified as being required to reduce the risk to personnel associated with a MAE to ALARP, • thus contributing to management of	GWA Safety Case	Prevention (Administration) Control based on legislative requirements – must be adopted	Yes **C 13.7**

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CCE-01 Safety Critical Equipment Failure Risk Analysis and Demonstration of ALARP ALARP Control Measures				
	associated potential environmental consequences of MAEs.			
Management System Specific Measures: Key Standards or Procedures				
Procedures and Administration	Implement management systems to maintain: • MSPS 03 Maintenance and Inspection • MSPS 04 Safe Work Control • MSPS 05 Management of Change • Quality Requirements for Supply of Products and Service • Provide Assurance Procedure.	MSPS-03 MSPS-04 MSPS-05 Provide Assurance Procedure	Prevention (Administration)	Yes – See Implementation Strategy
Risk Evaluation				
Refer to MEEs.				

EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 19 Refer to relevant MEE EPOs: EPOs 13-18	**C 19.1** Maintain hydraulic supplies (e.g. to support Safety Instrumented Systems and actuation of SCE valves/isolations).	**PS 19.1** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F06 – Safety Instrumented System to; o maintain hydraulic supplies (e.g. to support Safety Instrumented Systems and actuation of SCE valves/isolations).	**MC 1.11.1** Refer to Section 6.7.1
	C 19.2 Maintain protection from environmental conditions.	**PS 19.2** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • P01 – Pressure Vessels • P02 – Heat Exchanger • P03 – Rotating Equipment • P07 – Topsides / Surface Structures • P08 – Piping Systems • P09 – Pipeline Systems • P10 – Wells • P21 – Substructures; for each SCE to; o protect equipment from adverse environmental conditions (e.g. heat,	**MC 1.11.1** Refer to Section 6.7.1

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EPOs, EPSs and MCs			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
		cold, moisture, chemical reaction/ incompatibility).	
	C 19.3 Maintain UPS / emergency power system to supply Essential safety systems.	**PS 19.3** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • F25 – UPS / Emergency Power to; o provide continuous supply of power (emergency generation and uninterruptable power supply (UPS) to Essential loads following a total (mains) power failure.	**MC 1.11.1** Refer to Section 6.7.1
	C 19.4 Maintain climate controlled enclosures to protect essential equipment from adverse environmental conditions	**PS 19.4** Integrity will be managed in accordance with SCE Management Procedure (Section 7.2.9) and SCE Technical Performance Standard(s) to prevent environment risk related damage to SCEs for: • E02 – Safety Critical Buildings to; protect essential equipment from adverse environmental conditions by; o providing ventilation to ensure that the zonal classification is maintained within an enclosure or building via adequate or dilution ventilation, and; o preventing ingress of hazardous products from external sources into buildings / enclosures located within a hazardous/non-hazardous area.	**MC 1.11.1** Refer to Section 6.7.1
	C 13.7 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009: Accepted Safety Case for the GWA facility.	**PS 13.7** Refer to Section 6.8.3	**MC 13.7.1** Refer to Section 6.8.3

GWA: Major Environmental Event Datasheet	
MEE Number	All
Hazard Description	Generic Human Errors – Degradation Factors
Hazard Ref ID	N/A
Hazard Description	
Hazard Overview and Scope	
There are a number of causes of human errors which contribute to MEEs, or which can result in failure or degradation of the barriers in place to protect against MEEs. These are presented in the following bowtie pages and include; • task issues, e.g. poor task design; time pressures, task complexity • poor physical interfaces / working environment	

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- provision of inappropriate tools for the task
- communication errors, i.e. poor quality information, lack of clarity in instructions
- operator failings, e.g. competence, fitness, impairment or fatigue
- organisational issues, e.g. peer pressure, poor safety culture, inadequate supervision, lack of clarity on roles and expectations.

The Generic Human Errors bowtie illustrates the causes, outcomes and the barriers in place for these failure mechanisms. Human Errors are managed solely via the WMS (no SCEs) and the bowtie is included in this section for completeness. Refer to Section 7 Implementation Strategy for applicable Management System Procedures.

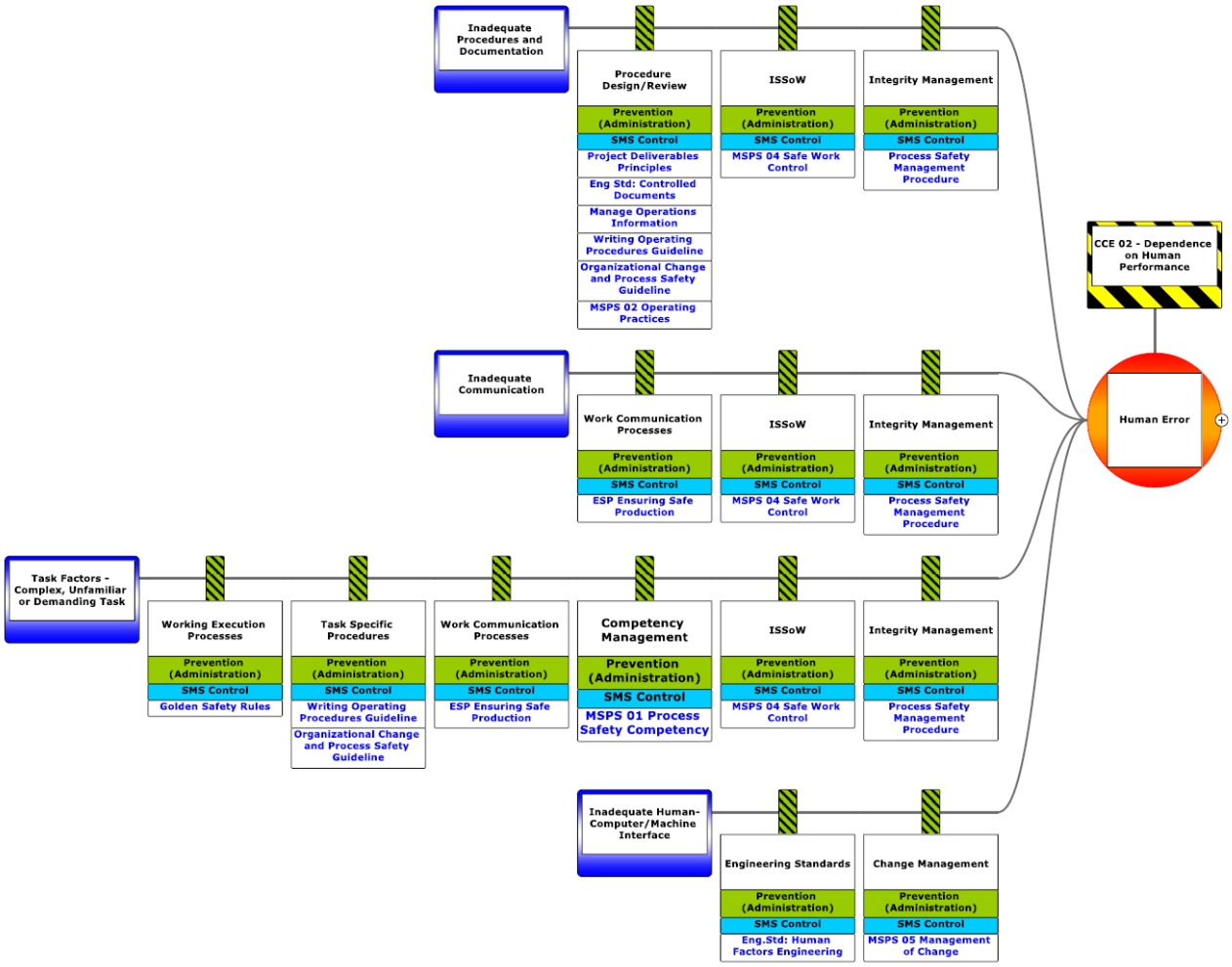


Figure 6-34: Generic Bowtie – Human Error (Causes 1 – 4)

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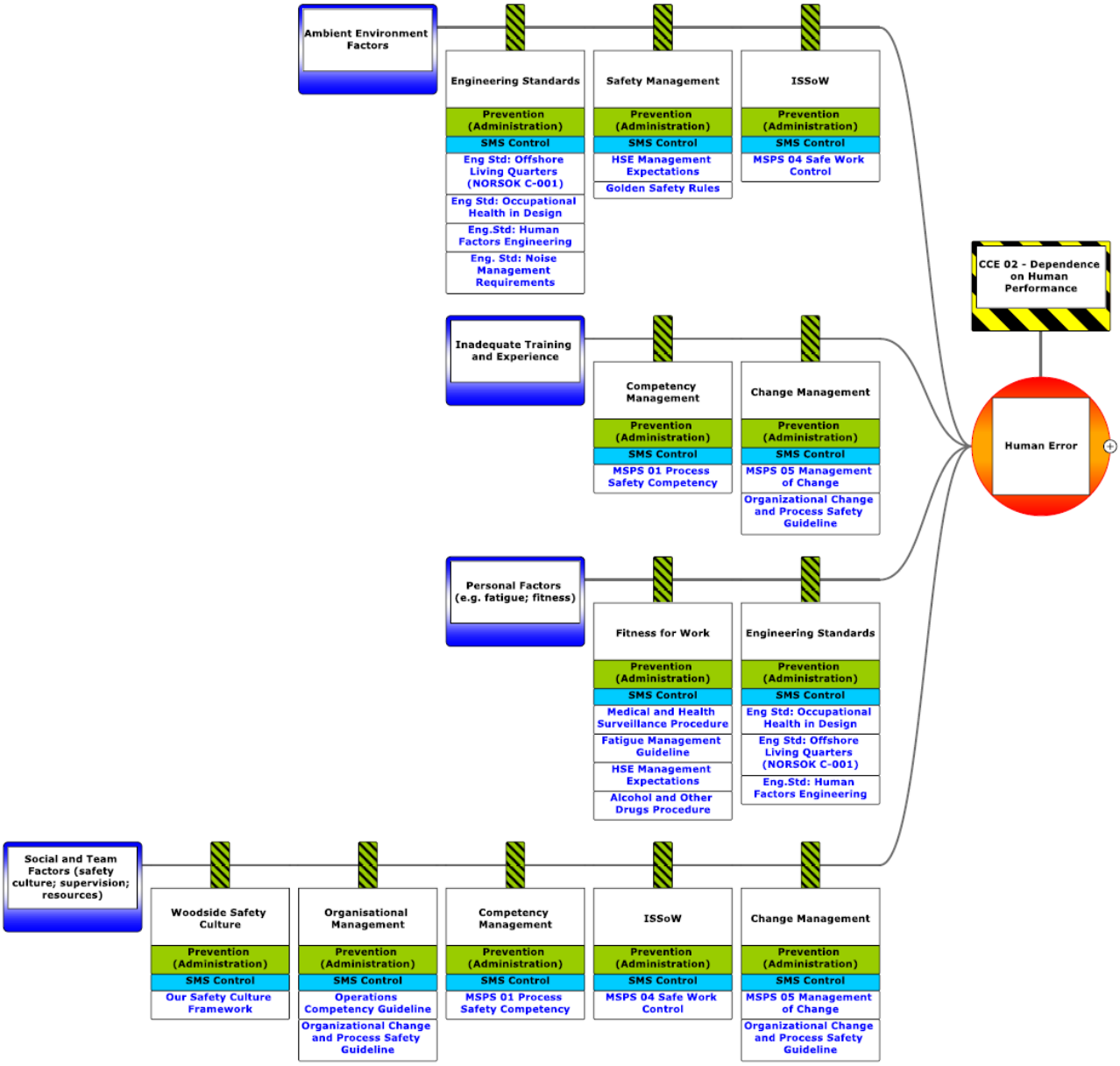


Figure 6-35: Generic Bowtie – Human Error (Causes 5 – 8)

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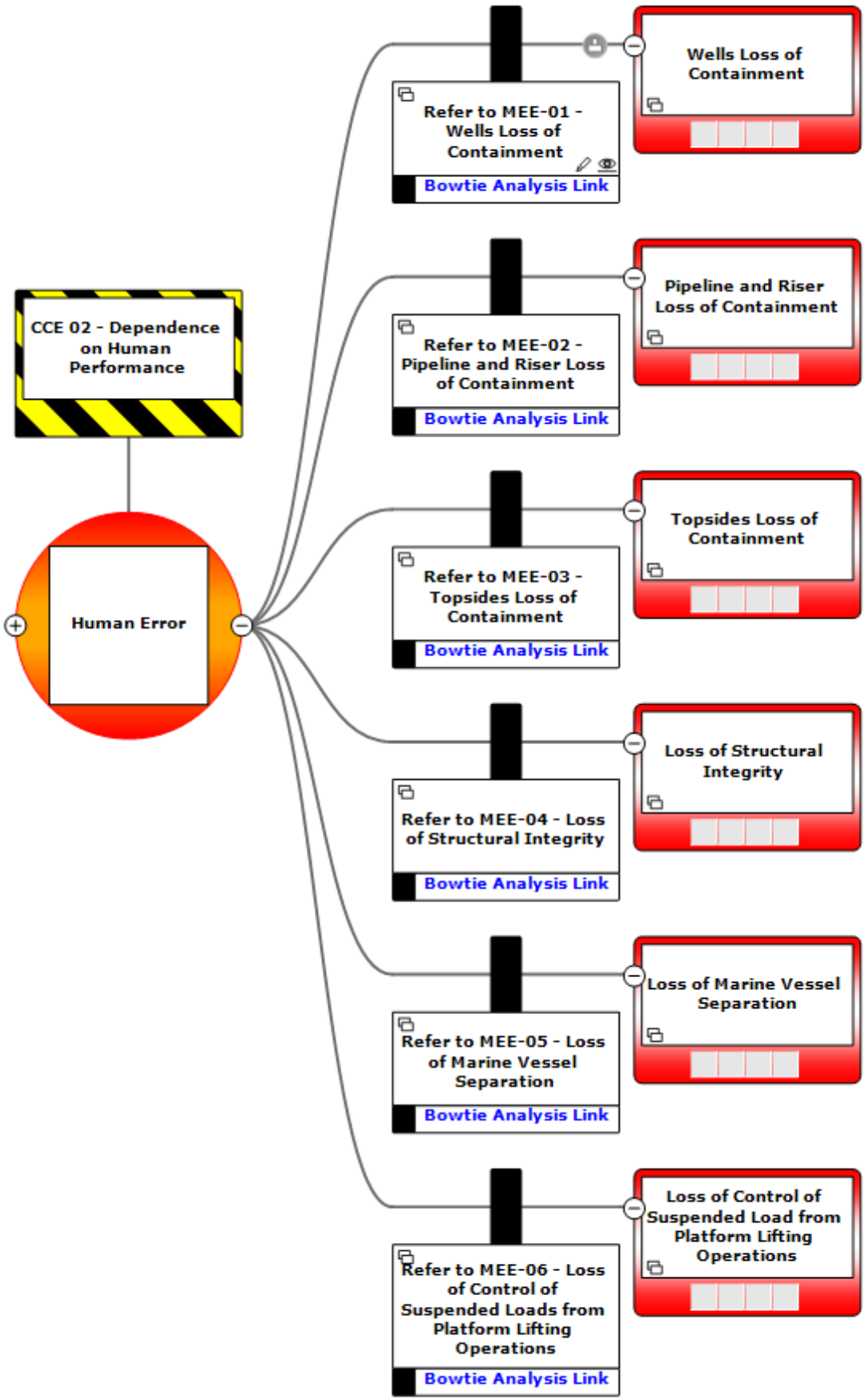


Figure 6-36: Generic Bowtie – Human Error (Outcomes)

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6.9 Unplanned activities (accidents, incidents, emergency situations)

6.9.1 Unplanned hydrocarbon or chemical release: hydrocarbon release during bunkering/refuelling and chemical release during transfer, storage and use

Context		
Operational details – Section 3.6 Chemical usage – Section 3.6.10	Physical environment – Section 4.4 Protected species – Section 4.6	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	***Environmental value(s) potentially impacted***						***Evaluation***						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP Tools	Acceptability	Outcome
Accidental discharge of marine diesel during bunkering/refuelling or chemicals release during transfer, storage or use.		✓			✓		A	D	2	M	LCS GP PJ	Broadly Acceptable	EPO 20

Description of source of risk

Bunkering of marine diesel between the facility support vessels, the ASV and the GWA facility routinely occurs during the Petroleum Activity, along with bulk transfers of chemicals such as glycol (TEG). Risks associated with these activities are described below.

Marine diesel bunkering/refuelling

Mechanisms are available to capture diesel from process/piping associated with bunkering and fuel transfers, which can be used to drain to a caisson with an oil recovery system. The diesel unloading stations have isolation and vent valves to allow draining of bunkering hoses between uses.

Two credible scenarios for the loss of containment of marine diesel during bunkering operations were identified:

- partial or total failure of a bulk transfer hose or fittings during bunkering, due to operational stress or other integrity issues could spill marine diesel to the deck and/or into the marine environment. This would be in the order of less than 0.2 m^3, based on the likely volume of a bulk transfer hose (assuming a failure of the dry break and complete loss of hose volume)
- partial or total failure of a bulk transfer hose or fittings during bunkering or refuelling, combined with a failure in procedure to shutoff fuel pumps, for a period of up to 15 minutes, resulting in approximately 24 m^3 marine diesel loss to the deck and/or into the marine environment.

Bulk chemical transfer

Bulk transfer of TEG between platform support vessels and the GWA facility occurs typically in smaller quantities than marine diesel. Similar to a spill event during refuelling, the most likely spill volume of TEG is likely to be less than 0.2 m^3 based on the volume of the transfer hose and the immediate shutoff of the pumps by personnel involved in the bulk transfer process. However, the worst-case credible spill scenario could result in up to 8 m^3 of TEG being discharged. This unlikely scenario represents a complete failure of the bulk transfer hose combined with a failure to follow procedures (which require transfer activities to be monitored), coupled with a failure to immediately shut off pumps.

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Chemicals use and storage

Chemicals are used during the Petroleum Activity for a variety of purposes (refer to Section 3.6.10 and Section 3.7.5). Spills of chemicals (including non-process hydrocarbons) can originate from stored hydrocarbons/chemicals or equipment on the platform, vessel decks or subsea (refer to Section 6.7.4 for an assessment of the impacts of planned chemical discharges).

Operational process chemicals are typically stored in dedicated vessels which have similar controls of those related to mitigating hydrocarbon releases (e.g. dedicated tanks, permanent piping to the process, isolatable by valves etc.). The chemicals stored in the largest volumes on the GWA facility are MEG and TEG, both operational process chemicals stored in bulk (30 m^3 and 23 m^3 respectively). The MEG and TEG tanks are classified as pressure vessels, as such are covered under relevant performance standards.

The GWA facility and facility support vessels also store other non-process chemicals and hydrocarbons in bulk, in various volumes (up to approximately 6 m^3). Operational non-process chemicals and maintenance chemicals present on the GWA facility and support vessels are generally held in low quantities (usually less than 50 L).

Subsea support vessels undertaking IMMR activities may also store quantities of chemicals for subsea use. Accidental releases of small quantities of subsea chemicals may occur (e.g. deck spills). Operational experience indicates potential volumes of such spills is small (< 20 L). Subsea chemical use is described in Section 3.7.5; subsea operational chemicals are subject to the chemical selection process outlined in Section 7.2.3.

Chemical storage areas are typically set up in cabinets or bunded storage areas to contain any releases to deck from transportable containers (e.g. IBCs, barrels, drums, pails etc.). Releases from equipment are predominantly from the failure of hydraulic hoses or minor leaks from process components, or spills during refuelling of equipment, which can either be located within bunded/drained areas or outside of bunded/drained areas.

Subsea leaks may occur from subsea infrastructure and associated control systems as a result of equipment failure, degradation or damage. Unplanned releases may occur from hydraulic lines, fittings, umbilicals, hose connections, valves or other subsea equipment. Operational experience indicates such releases are generally localised and limited in volume.

ROV operations undertaken during IMMR activities also utilise hydraulic systems and tooling containing relatively small volumes of hydraulic fluid (typically less than 50 L per system). Minor releases may occur during connection and disconnection of subsea tooling, through leakage from hot stab connections, or as a result of hose or fitting failures. In rare cases, tooling failures may result in releases of less than 5 L of hydraulic fluid to the marine environment.

Subsea control fluids and hydraulic fluids used during IMMR activities are subject to the chemical selection and assessment process described in Section 7.2.3.

Quantitative spill risk assessment

Woodside has commissioned RPS to model several marine diesel spills, including surface spill volumes of 8m^3 in the offshore waters of northwest WA.

The results of these models have indicated that exposure to surface hydrocarbons above the 10 g/m^2 threshold is limited to the immediate vicinity of the release site, with little potential to extend beyond 1 km.

Given the volume of potential release, specific modelling for a 24 m^3 marine diesel loss scenario has not been undertaken as it is significantly less than the 1000 m^3 of marine diesel loss assessed under the loss of marine vessel separation scenario in Section 6.8.7. It is considered that exposure to thresholds concentrations from a 24 m^3 surface spill from bunkering activities would be well within the EMBA for the hydrocarbon release scenario detailed in Section 6.8.7.

Hydrocarbon characteristics

Refer to Section 6.8.2.2 for a description of the characteristics of marine diesel, including detail on the predicted fate and weathering of a spill to the marine environment.

As mentioned, note the marine diesel scenario considered in Section 6.8.7 is significantly larger than the volumes considered here.

Consequence assessment

Marine diesel

Given the low viscosity of marine diesel, along with the high portion of volatile components, a spill of up 24 m^3 of marine diesel during transfer, storage or use during operations would spread and weather rapidly. The potential biological and ecological impacts associated with much larger hydrocarbon spills are presented in Section 6.8.7; further detail on impacts specific to a spill of marine diesel from a bunkering loss are provided below.

Environmental receptors at risk would be restricted to those in the immediate vicinity and may include:

- marine fauna, particularly fauna associated with the sea surface (e.g. seabirds, air breathing vertebrates)
- plankton.

Given the relatively small worst-case credible release volume, the non-persistent nature of marine diesel and the low sensitivity of the receiving environment within the Petroleum Activity (i.e. offshore open water environment, refer to

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Section 4), potential impacts are expected to be short term (<1 year) and confined to a localised extent from the release location (<1 km for 24 m^3 release). Such impacts may include:

- localised decrease in water quality
- acute toxic effects to planktonic organisms in the immediate area of the spill.

Impacts to plankton may include acute toxicity resulting in mortality of planktonic organisms. Given the rapid turnover of plankton communities, these impacts would be short-lived (hours to days).

Impacts to fish are expected to be of no lasting effect, as fish species are mobile and expected to avoid the area affected by a marine diesel spill. Impacts to larger fauna such as cetaceans and marine turtles are expected to be light fouling, potentially resulting in irritation of sensitive membranes such as the eyes, mouth and digestive system (Helm et al. 2015). Mortality of larger fauna is not expected to occur.

No impacts to ecosystem function are expected.

No impacts are predicted to Ancient Coastline at 125 m Depth Contour KEF. Although, it is overlapped by the Operational Area due to the nature of the spill (i.e. surface spill), water depth and the reduced likelihood of diesel components interacting with the seafloor where the KEF values (i.e. unique hard substrate and associated demersal finfish and benthic fauna) are situated in 125 m water depths, it is unlikely there will be impacts to this KEF.

Minor, short term impacts may occur to other marine users (e.g. commercial fisheries); however, given the small scale of a worst-case marine diesel spill, fishing vessel exclusion within the PSZ, it is unlikely there would be any significant impact to commercial fishers.

Refer to the summary of potential impacts to environmental values(s) within Section 6.8.7 for a description of the impacts of hydrocarbons on the above biota, noting that the extent of the EMBA associated with a marine diesel spill from loss during bunkering is much reduced by comparison (in terms of spatial and temporal scales) and hence the potential for consequences from a loss during bunkering are considered to be minor and short-term.

Chemicals and non-process hydrocarbons

MEG and TEG are miscible in water and are considered PLONOR. A maximum credible spill of MEG or TEG is expected to mix with the receiving environment, resulting in no lasting environmental impact. Corrosion inhibitor is not OCNS rated but is expected to rapidly dilute in the receiving environment.

Accidental releases of chemicals decrease the water quality in the immediate area of the release. The consequence is expected to be slight given the temporary and localised nature of the spill, the water depths, the open ocean mixing environment, Petroleum Activity from sensitive receptors and relatively low credible release volumes. Depending on the chemical released the toxicity and/ or potential to bioaccumulate may potentially result in impacts to sediment quality, pelagic fish or other marine species in the vicinity of the discharge.

Potential impacts to plankton from an accidental chemical spill may include acute toxicity resulting in mortality of planktonic organisms. Given the rapid turnover of plankton communities and nature and scale of the credible releases, these impacts will be short-lived (hours to days). Impacts to fish are expected to be of no lasting effect, as fish species are mobile and expected to avoid the area affected by an accidental chemical spill. Impacts to air-breathing fauna such as cetaceans, birds and marine turtles, are expected to be restricted to irritation of sensitive membranes such as the eyes, mouth, and digestive system.

Slight, short-term impacts may occur to other marine users (e.g. commercial fisheries); however, given the limited fishing activity within the Operational Area (Section 4.10.1), risks to commercial fishers are not significant.

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[95]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Contract vessels complying with Marine Order 91 (Marine pollution prevention – oil) for safe vessel operations. Marine Order 91 reduces the risk of accidental	F: Yes. CS: Minimal cost. Standard practice	Marine Order 91 is required under Australian regulations; implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Control based on legislative requirement – must be adopted.	Yes **C 7.1**

[95] *Qualitative measure*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[95]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
hydrocarbon release during transfer.				
Good practice				
Chemical Selection and Assessment Environment Guideline: • Where Gold/Silver/E/D OCNS rating (and no OCNS substitution or product warning), chemicals are selected, no further control required. • If chemicals with a different OCNS rating, sub-warning, product warning or non-OCNS rated chemicals are required, chemicals are assessed in accordance with the procedure prior to use.	F: Yes. Woodside routinely implements a chemical selection process based on OCNS at the GWA facility. CS: Minimal. The OCNS is widely used throughout the industry, and chemical suppliers are aware of the requirements of the scheme.	Selection and assessment of chemicals in accordance with the Woodside process, reduces environmental impacts associated with planned chemical discharge	Woodside's chemical selection process is used to ensure fluids discharged meet Woodside's chemical environmental risk assessment standards while still providing the required technical capability.	Yes **C 5.1**
Diesel bunkering hoses: • be pressure-rated at purchase to reduce the risk of accidental hydrocarbon release during bunkering. • have dry-break couplings and flotation on fuel hoses.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring the appropriate equipment is in place, tested and maintained appropriately, the likelihood of a spill occurring is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/ sacrifice.	Yes **C 20.1**
Implementation of bunkering procedures to reduce the risk of a hydrocarbon release as a result of a bunkering incident.	F: Yes. CS: Minimal cost. Standard practice.	Reduced the likelihood of an unplanned release.	Benefits outweigh cost/ sacrifice.	Yes **C 20.2**
Chemicals and hydrocarbons will be stored safely to prevent the release to the marine environment.	F: Yes. CS: Minimal cost. Standard practice.	Reduces risk of unplanned chemical/diesel release.	Benefits outweigh cost/ sacrifice.	Yes **C 20.3**
Incident reports are raised for unplanned releases within event reporting system.	F: Yes. CS: Minimal cost. Standard practice.	Good practice that operators identify, report and learn from unplanned release events. Supports	Control based on Woodside standard and regulatory requirements.	Yes **C 13.8**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[95]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
		compliance with regulatory reporting requirements.		
Professional judgement – Eliminate				
None identified.				
Professional judgement – Substitute				
None identified.				
Professional judgement – Engineered Solution				
None identified.				
Emergency Response				
Mitigation – hydrocarbon spill response.	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.			
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the potential impacts/risks associated with unplanned hydrocarbon or chemical release during bunkering, transfer, storage and use to be ALARP. As no reasonably practicable controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered inherently ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, unplanned hydrocarbon or chemical release during bunkering, transfer, storage and use represent a moderate risk rating that is unlikely to result in a consequence greater than minor short-term impacts. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), Woodside considers the adopted controls appropriate to manage the impacts/risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
EPO 20 No unplanned release of hydrocarbons or chemicals to the marine environment.	**C 7.1** Contract vessels complying with Marine Order 91 (Marine pollution prevention – oil) for safe vessel operations.	**PS 7.1** Refer to Section 6.7.6.	**MC 7.1.1** Refer to Section 6.7.6.
	C 5.1 Chemical Selection and Assessment Environment Guideline: • where Gold/Silver/E/D OCNS rating (and no OCNS substitution or	**PS 5.1** Refer to Section 6.7.4.	**MC 5.1.1** Refer to Section 6.7.4.

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EPOs, EPS and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
	product warning), chemicals are selected, no further control required. • if chemicals with a different OCNS rating, substitution warning, product warning or non-OCNS rated chemicals are required, chemicals will be assessed in accordance with the procedure prior to use.		
	C 20.1 Diesel bunkering hoses: • be pressure-rated at purchase to reduce the risk of accidental hydrocarbon release during bunkering. • have dry-break couplings on fuel hoses.	**PS 20.1** All diesel transfer hoses to have dry break couplings and pressure rating suitable for intended use.	**MC 20.1.1** Records demonstrate diesel transfer hoses are fitted with dry break couplings and are pressure rated.
	C 20.2 Implementation of bunkering procedures to reduce the risk of a hydrocarbon release as a result of a bunkering incident.	**PS 20.2.1** Implement Diesel Fuel System – Loading Bunkers – Standard Operating Procedure. Key requirements include: • Routine bunkering to be carried out when adequate lighting is available for spill detection unless following an activity-specific risk assessment approved by the Offshore Installation Manager (OIM). • Communications between the supply vessel and facility bunker station will be maintained during bunkering. • Hoses and connections to be visually checked during refuelling. • Tank levels will be monitored throughout bunkering. • Spill clean-up equipment will be available near the bunker station.	**MC 20.2.1** Records demonstrate bunkering undertaken in accordance with facility and contractor bunkering procedures.

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EPOs, EPS and MC			
Environmental Performance Outcomes	***Controls***	***Environmental Performance Standards***	***Measurement Criteria***
		• Bunkering hose inventory will be drained to the supply vessel before disconnection.	
		PS 20.2.2 Vessels will have their own bunkering plans, checklists and Ship Oil Pollution Emergency Plan (SOPEP) depending on the specifications of both the supplying and receiving vessel.	
	C 20.3 Chemicals and hydrocarbons will be stored safely to prevent the release to the marine environment.	**PS 20.3** Chemical/diesel storage areas for transportable containers on the GWA facility will have adequate containment in place to contain an accidental chemical spill.	**MC 20.3.1** GWA facility chemical/diesel storage locations provided with adequate bunding/containment.
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3
	Mitigation – hydrocarbon spill response	Refer to Appendix G for discussion around the ALARP assessment of controls related to hydrocarbon spill response.	

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6.9.2 Unplanned discharges: hazardous and non-hazardous waste management

Context		
Operational details – Section 3.6	Physical environment – Section 4.4 Habitats and biological communities – Section 4.5	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	*Environmental value(s) potentially impacted*						*Evaluation*						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP Tools	Acceptability	Outcome
Incorrect disposal or accidental discharge of non-hazardous and hazardous waste to the marine environment.	✓	✓			✓		A	F	2	L	LCS GP	Broadly Acceptable	EPO 21

Description of source of risk

Non-hazardous and hazardous waste

Normal operations on the GWA facility and support vessels results in a variety of hazardous and non-hazardous wastes. These materials could potentially impact the marine environment if incorrectly disposed of, lost overboard, or discharged in significant quantities.

Non-hazardous wastes include domestic and industrial wastes, such as aluminium cans, bottles, paper and cardboard, scrap steel. Hazardous wastes include recovered solvents, excess or spent chemicals, oil contaminated materials (e.g. sorbents, filters and rags), batteries, used lubricating oils and potentially material containing Naturally Occurring Radioactive Material (NORMs)[96]. Sand and sludges may also be periodically generated during well clean-up operations, de-sanding, vessel maintenance and removal of redundant equipment.

Equipment (small hand-held tools) and Personal Protective Equipment (PPE) may be accidentally lost overboard. Equipment that has been recorded as being lost on other similar facilities and vessels has primarily been windblown or dropped overboard and has included things such as hardhats, gloves, safety glasses and small tools or materials. Equipment (small hand-held tools) and PPE are not classified as waste as per the *Woodside Offshore Facilities Waste Management Plan* and are not included any further in this risk assessment. Equipment (small hand-held tools) and PPE lost overboard are recorded, investigated and corrective actions tracked as per requirements in Section 7.7.3 and Section 7.13.3. Loss of hazardous and non-hazardous wastes have occurred during backloading activities, periods of adverse weather and incorrect waste storage.

All waste materials not suitable for discharge to the environment that are generated on GWA, including hazardous wastes (i.e. liquid and solid wastes), are transported to shore for disposal or recycling by Woodside's licensed waste contractor.

[96] *Laboratory analyses results of material produced from the desander (refer to Section 3.6.5.6) are consistent with the Exempt Waste category as per the Australian six-tier radioactive waste classification scheme (i.e. very low levels of radioactivity; thus waste is managed and disposed of similar to the process applied for non-radioactive waste). The results also support the understanding that sand generated from the GWA facility contains little to no NORMs*

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Consequence assessment
Environmental value(s) at risk
The potential impacts of hazardous or non-hazardous solid waste/equipment accidentally discharged to the marine environment include contamination of the environment, as well as secondary impacts relating to potential contact of marine fauna with wastes. This could result in entanglement or ingestion and lead to injury and death of individual animals. The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the location of the Petroleum Activity, the types, size and frequency of wastes that could occur, and species present. **Water and sediment quality** Hazardous solid wastes such as paint cans, oily rags, etc. can cause localised contamination of the water and sediment through a release of toxins and chemicals. Given likely small volumes of any unplanned solid waste discharge, and the occasional nature of the event, these would result in temporary and highly localised changes to the water quality. **Seabirds and migratory shorebirds, fish, marine reptiles and marine mammals** The unplanned discharge of solid wastes can result in mortality to fauna, either through contamination or physical injury depending on the nature of the waste. Marine fauna, including fish, seabirds and shorebirds, marine mammals and marine reptiles may be impacted through ingestion or entanglement of waste or through exposure to toxic chemicals. Ingestion or entanglement of marine fauna has the potential for physical harm which may limit feeding/foraging behaviours and thus can result in mortalities. Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris was listed as a key threatening process under the EPBC Act in August 2003 (Commonwealth of Australia 2018). The Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (Commonwealth of Australia 2018) identifies EPBC Act-listed species for which there are scientifically documented adverse impacts resulting from marine debris. Marine turtles and seabirds in particular may be at risk from plastics which may cause entanglement or be mistaken for food (Commonwealth of Australia 2017; Commonwealth of Australia 2018) and ingested causing damage to internal tissues and potentially preventing feeding activities. In the worst instance this could have a lethal effect to an individual. Marine debris has been identified as threat in the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017). Impacts to species including fish, birds, marine mammals and marine reptiles from the unplanned discharge of solid waste is unlikely given low occurrence of unplanned discharges. Significant impacts are unlikely to occur at an individual level and will not occur at a population level, nor result in the decrease of the quality of the habitat such that the extent of these species is likely to decline. The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the nature and scale of activities that may generate wastes, the types, size and frequency of wastes that could occur. **Values and sensitivities** <u>Ancient Coastline at 125 m Depth Contour</u> The Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF. No significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with this KEF have been observed in the Operational Area (Section 4.7). Given the limited spatial extent of impacts from loss of waste materials into the marine environment, potential impacts to this regional-scale KEF is expected to be localised with no lasting effect. <u>Montebello Marine Park</u> While the Operational Area overlaps the Montebello Marine Park, GWA subsea infrastructure does not. Given the limited spatial extent of impacts from loss of waste materials into the marine environment, potential impacts to this marine park is expected to be localised with no lasting effect.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[97]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Support vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution Prevention – packaged harmful substances) 2014; • Marine Order 95 (Pollution prevention – Garbage).	F: Yes. CS: Minimal cost. Standard practice.	Implementation of Marine Order 94 and 95 reduces the likelihood of a harmful substance being released to the environment. Implementation is standard practice for commercial vessels as applicable to vessel size, type and class.	Controls based on legislative requirements – must be adopted.	Yes **C 21.1**
Management and handling of NORMs in accordance with Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) guidelines reduced the likelihood of accidental release or incorrect disposal.	F: Yes CS: Minimal cost. Standard practice.	Australian Regulations require NORMS to be managed for appropriate classification, handling and disposal.	Controls based on legislative requirements – must be adopted.	Yes **C 21.2**
Good practice				
Implementation of Waste Management Plan for Offshore Facilities.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of a release of waste to the environment by providing guidance on storage, handling and transport of waste streams.	Benefit outweighs cost/sacrifice.	Yes **C 21.3**
If safe and practicable to do so; vessel ROV or crane used to attempt recovery of material[98] environmentally hazardous or non hazardous solid object/waste container lost overboard.	F: Yes. CS: Minimal cost. Standard practice.	Potentially reduces consequence by recovering object/waste container from the environment.	Benefit outweighs cost/sacrifice.	Yes **C 21.4**
Incident reports are raised for unplanned releases within event reporting system.	F: Yes. CS: Minimal cost. Standard practice.	Good practice that operators identify, report and learn from unplanned release events. Supports compliance with regulatory reporting requirements.	Control based on Woodside standard and regulatory requirements.	Yes **C 13.8**

[97] Qualitative measure

[98] For the purposes of this control/performance standard "material" is defined as unplanned releases of environmentally hazardous or non-hazardous solid object/waste events with an environmental consequence of >F

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[97]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Professional judgement – eliminate				
None identified.				
Professional judgement – substitute				
None identified.				
Professional judgement – engineered solution				
None identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the potential impacts/risks associated with hazardous and non-hazardous waste management to be ALARP. As no reasonably practicable controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered inherently ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, hazardous and non-hazardous waste management represents a low risk rating that is unlikely to result in a consequence greater than no lasting effect and localised impact not significant to individuals or a small proportion of the population, or to physical or biological attribute within the Operational Area On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), Woodside considers the adopted controls appropriate to manage the risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
EPO 21 No unplanned release of solid hazardous or non-hazardous waste[99] to the marine environment.	**C 21.1** Support vessels compliant with Marine Orders for safe vessel operations: • Marine Order 94 (Marine pollution prevention – packaged harmful substances) 2014; • Marine Order 95 (Pollution prevention – Garbage).	**PS 7.1** Refer to Section 6.7.6	**MC 7.1.1** Refer to Section 6.7.6
	C 21.2 Management of NORMs in accordance with Australian Radiation Protection and Nuclear	**PS 21.2** In the event that waste materials are routinely identified as NORM (above exempted levels) disposal	**MC 21.2.1** Waste management records demonstrate appropriate handling

[99] *Waste as defined in the Woodside Offshore Facilities Waste Management Plan*

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
	Safety Agency (ARPANSA) guidelines.	will be coordinated in line Management of NORM guidelines (Radiation Health and Safety Advisory Council 2005), and State waste management requirements for appropriate waste disposal.	and disposal of NORM classified material.
	C 21.3 Implementation of Waste Management Plan for Offshore Facilities.	**PS 21.3** Implementation of Waste Management Plan for Offshore Facilities, including: • waste segregation and storage • records of all waste to be disposed, treated or recycled shall be maintained, and shall include (though not limited to) quantity of waste, waste type and disposal/recycle location • waste streams shall be appropriately handled, tested, monitored and managed according to their hazard and recyclability class.	**MC 21.3.1** Records demonstrate implementation of Waste Management Plan for Offshore Facilities.
	C 21.4 If safe and practicable to do so, using vessels, ROV or crane to attempt recovery of material environmentally hazardous or non-hazardous solid object/waste container lost overboard.	**PS 21.4.1** Material solid waste/equipment dropped to the marine environment will be recovered where safe and practicable to do so. Where retrieval is not practicable and/or safe, material items (property) that are lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.	**MC 21.4.1** Records detail the recovery attempt consideration and status of material environmentally hazardous or non-hazardous solid waste object/container lost to the marine environment.
		PS 21.4.2 Incident reports raised for unplanned loss of solid waste/equipment and recordable incidents notified for material unplanned loss, regardless of whether the item/s are recovered.	
	C 13.8 Incident reports are raised for unplanned releases within event reporting system.	**PS 13.8** Refer to Section 6.8.3	**MC 13.8.1** Refer to Section 6.8.3

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6.9.3 Physical presence: interactions with marine fauna

Context		
Facility layout and description – Section 3.5 Support vessel operations – Section 3.8	Protected species – Section 4.6	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	*Environmental value(s) potentially impacted*						*Evaluation*						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP tools	Acceptability	Outcome
Physical presence of support vessels resulting in collision with marine fauna.					✓		A	F	1	L	LCS GP PJ	Broadly Acceptable	EPO 22

Description of source of risk

Support vessels operating in and around the Operational Area may present a potential hazard to cetaceans and other protected marine fauna such as whale sharks and marine reptiles. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial injury or serious injury that may affect life functions (e.g. movement and reproduction) and mortality. The frequency and severity of impacts due to collisions vary greatly and is dependent on vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth), and the type of marine fauna potentially present and their behaviours.

Routine vessel activities associated with the Petroleum Activity are concentrated within the PSZ – e.g. activities performed by facility support vessels at the GWA facility, which are typically fortnightly. Subsea support vessels, HLVs and USVs may undertake activities (e.g. IMMR activities, removing redundant equipment) within the Operational Area at any time, including within parts of the Operational Area which are beyond the PSZ. The duration and location of these activities varies depending on the activity being undertaken.

An ASV may be present for up to approximately 3 months during a planned extended maintenance campaign, shutdown maintenance or major project; however, it is connected to the GWA facility and is stationary. An ASV may be used approximately once every 3-6 years.

Consequence assessment

Marine mammals, reptiles and sharks

The likelihood of vessel-whale collision being lethal is influenced by vessel speed; the greater the speed at impact, the greater the risk of mortality (Jensen and Silber 2004; Laist et al. 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk is less than 10% at a speed of four knots. Vessel–whale collisions at this speed are uncommon and, based on reported data contained in the US NOAA database (Jensen and Silber 2004), there only two known instances of collisions when the vessel was travelling at less than six knots. Both of these were from whale watching vessels that were deliberately placed among whales.

Vessels undertaking the Petroleum Activity within the Operational Area are likely to be travelling at low speed and much of the time vessels are holding station. Therefore, the risk of a vessel collision with protected species resulting in death is inherently low.

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Cetaceans considered to be at risk of vessel-collision due to relatively slow movement and proportion of time spent at or near the sea surface. There are no recognised cetacean BIAs that overlap the Operational Area. The humpback whale migration BIA and pygmy whale migration BIA are approximately 15 km and 29 km from the Operational Area respectively (refer to Section 4.6.3). Adverse interactions between vessels and humpback or pygmy blue whales are considered to be unlikely due to the slow speeds of support vessels within the Operational Area, and the distance of the Operational Area from these known BIAs.

Whale sharks are at risk from vessel strikes when feeding at the surface or in shallow waters (where there is limited option to dive). Whale sharks may traverse offshore NWS waters including the Operational Area during their migrations to and from Ningaloo Reef and a BIA for foraging whale sharks overlaps with the Operational Area. However, it is expected that whale shark presence within the Operational Area would not comprise of significant numbers given the main whale shark aggregation area is located in Ningaloo Marine Park 226 km south-west of the Operational Area, and their presence in the Operational Area would be transitory and of a short duration. There are no constraints preventing whale sharks from moving away from vessels (e.g. shallow water or shorelines).

Most vessel movements will be centred around the GWA facility. Although the Operational Area overlaps Unnamed Shoal, where water depths are ~40–50 m, throughout the rest of the Operational Area water depths are much deeper (between 74-200 m) and are unlikely to represent important habitat for marine turtles. There are no emergent features or reef habitat in close proximity to the GWA facility.

Although the flatback turtle internesting BIA, internesting buffer BIA and internesting habitat critical for the species overlaps the Operational Area, the distance of the nearest turtle nesting and internesting areas (habitat critical to survival to marine turtles) is the Montebello Islands, which is approximately 38 km from the Operational Area at the nearest point and approximately 89 km from the GWA facility.

It is acknowledged, however, that there are significant nesting sites along the WA mainland coast and islands of the region and that turtles may occur within the Operational Area in low numbers. The internesting BIA is a spatially assigned buffer for marine turtles nesting at the Montebello Islands. Therefore, it is unlikely that flatback turtles nesting at the Montebello Islands will be found to aggregate in significant numbers within the Operational Area. Notably, the typical response from turtles on the surface to the presence of vessels is to dive (a potential “startle” response), which decreases the risk of collisions (Hazel et al. 2007). As with cetaceans, the risk of collisions between turtles and vessels increases with vessel speed (Hazel et al. 2007). Given the low speeds of vessels undertaking the Petroleum Activity, along with the expected low numbers of turtles within the Operational Area, interactions between vessels and turtles are considered to be highly unlikely.

It is not deemed credible that vessel movement associated with the Petroleum Activity could have a significant impact on marine fauna populations given:

- the low presence of transiting individuals
- avoidance behaviour commonly displayed by whales, whale sharks and marine turtles
- low operating speed of the activity support vessels, unless operating in an emergency).

Activities are considered unlikely to result in a consequence greater than localised disruption to individuals or a small proportion of the population with no lasting effect and no impact on critical habitat or fauna activity.

Values and Sensitivities

Ancient Coastline at 125 m Depth Contour

The Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF. No significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with this KEF have been observed in the Operational Area (Section 4.7). Given the limited spatial extent of impacts from interactions with marine fauna, potential impacts to this regional-scale KEF is expected to be localised with no lasting effect.

Montebello Marine Park

While the Operational Area overlaps the Montebello Marine Park, GWA subsea infrastructure does not. Given the limited spatial extent of impacts from interactions with marine fauna, potential impacts to the Montebello Marine Park are expected to be localised with no lasting effect.

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[100]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
EPBC Regulations 2025 – Part 8 Division 8.1 Interacting with cetaceans, which include the following measures[101]: • Vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost. Standard practice.	Reductions in speed around protected cetaceans reduce the likelihood of collision.	Controls based on legislative requirements – must be adopted.	Yes **C 4.1**
Good practice				
Vessels will comply with Biodiversity Conservation Regulations (WA) 2018 for whale shark speed control and separation distances: Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementing controls to reduce vessel speed around whale sharks can potentially reduce the likelihood of unplanned interaction.	Benefits outweigh cost/sacrifice. Good practice.	Yes **C 4.2**
Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost. Standard practice.	Reducing the speed vessels travel within 300 m of a turtle can reduce the likelihood of an unplanned interaction.	Benefits outweigh cost/sacrifice. Good practice.	Yes **C 4.3**
Professional judgement – Eliminate				
Not using vessels.	F: No. No alternative to the use of vessels during the Petroleum	Not assessed, control not feasible.	Not assessed, control not feasible.	No

[100] *Qualitative measure*

[101] *For safety reasons, the specified distances requirements are not applied for a vessel holding station or with limited manoeuvrability (e.g. loading back-loading, close standby cover for overside working and emergency situations).*

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)[100]***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
	Activity was identified. Given vessels must be used to undertake the Petroleum Activity, there is no feasible means to eliminate the source of risk. CS: Not assessed, control not feasible.			
Professional judgement – Substitute				
None identified.				
Professional judgement – Engineered Solution				
None identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the adopted controls appropriate to manage risk of interactions with marine fauna. As no reasonably practicable additional/alternative controls were identified that would further reduce the impacts without disproportionate sacrifice, the impacts/risks are considered ALARP.				

Demonstration of acceptability
Acceptability statement: The risk assessment has determined that, given the adopted controls, interaction with marine fauna represents a low-risk rating that is highly unlikely to result in a consequence greater than no lasting effect and localised impact not significant to individuals or a small proportion of the population, and critical habitat or activity. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating acceptability (Section 2.6.2), Woodside considers the adopted controls appropriate to manage the risks to be managed to a level that is broadly acceptable, and compliance with those controls demonstrates that the EPOs are met.

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
EPO 22 No injury of, or mortality to, EPBC Act 1999 and listed	**C 4.1** EPBC Regulations 2025 – Part 8 Division 8.1 Interacting with cetaceans,	**PS 4.1** Refer to Section 6.7.3.	**MC 4.1.1** Refer to Section 6.7.3.
			MC 4.1.2 Refer to Section 6.7.3.

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
marine fauna as a result of the Petroleum Activity.	which include the following measures[102]: • vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • if the cetacean shows signs of being disturbed, support vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.		
	C 4.2 Vessels will comply with Biodiversity Conservation Regulations (WA) 2018 for whale shark speed control and separation distances: • vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	**PS 4.2** Refer to Section 6.7.3.	**MC 4.2.1** Refer to Section 6.7.3.
	C 4.3 Vessels will not travel greater than 6 knots within 300 m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	**PS 4.3** Refer to Section 6.7.3.	**MC 4.3.1** Refer to Section 6.7.3.

[102] *For safety reasons, the specified distances requirements are not applied for a vessel holding station or with limited manoeuvrability (e.g. loading back-loading, close standby cover for overside working and emergency situations).*

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6.9.4 Physical presence: introduction of invasive marine species

Context		
Subsea IMMR activities – Section 3.7 Support vessel operations – Section 3.8	Regional context – Section 4.2 Physical environment – Section 4.4 Habitats and biological communities – Section 4.5 Protected species – Section 4.6 Socio-economic environment– Section 4.10	Stakeholder consultation – Section 5

Risk evaluation summary

Source of risk	*Environmental value(s) potentially impacted*						*Evaluation*						
	Marine sediment	Water quality	Air quality (incl odour)	Ecosystems/ habitat	Species	Socio-economic	Decision type	Consequence/ impact	Likelihood	Risk rating	ALARP Tools	Acceptability	Outcome
Invasive species in vessel ballast tanks or on vessels/ immersible equipment				✓	✓	✓	A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 23

Description of source of risk

Support vessels will be transiting to and from the Operational Area during the Petroleum Activity. Vessels may mobilise from domestic and international locations.

Support vessels may service routine needs (i.e. facility support vessels, refer to Section 3.8.1) and, less frequently, provide specialist services (subsea support vessels for IMMR refer to Section 3.8.2, and ASV refer to Section 3.8.2.1).

Routine vessel activities associated with the Petroleum Activity are primarily concentrated within the PSZ and include both continuous standby vessel operations (typically in two-week periods) and a PSVs to support routine supply operations (weekly visits with total presence in the Operational Area typically less than 24 hours per visit). The standby and PSV may be present at the platform concurrently during routine operations.

Subsea support vessels and HLVs may undertake activities (e.g. IMMR activities or removal of redundant equipment) throughout the Operational Area, including outside the PSZ. The duration and location of these activities vary depending on operational requirements.

An ASV may be deployed to support extended maintenance campaigns, shutdowns or major projects. During such campaigns, the ASV may operate continuously (24 hours per day) adjacent to the platform. ASV use is expected to be infrequent, with up to one campaign within the EP period (5 years), typically of up to three months' duration.

Vessels may be sourced from the local area (Dampier, Port Hedland, Cape Preston) or from further afield, depending on the type of vessel required and availability. In addition, infrequent import of materials (e.g. spares) from international suppliers may be required. Vessels arriving from international waters typically call into Dampier, where quarantine clearance including ballast log reviews is conducted in accordance with the *Biosecurity Act 2015.*

All vessels are inherently subject to some level of marine fouling. Organisms attach to the vessel hull, particularly in areas where organisms can find a suitable hard surface to settle (e.g. seams, strainers and unpainted surfaces) or where turbulence is lowest (e.g. niches, sea chests, etc). Organisms can also be drawn into ballast tanks during on-boarding of ballast water as cargo is unloaded or to balance vessels under load. Biofouling organisms can become established in an area through the release of propagules (e.g. eggs or larvae), or by attaching to substrate after becoming detached from the host vessel.

Non-indigenous marine species (NIMS) are species that have been introduced into a region beyond their natural biogeographic range and have the ability to survive, reproduce and establish founder populations. Not all NIMS

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introduced into an area thrive or cause demonstrable impacts. Indeed, the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. Only a subset of NIMS that become abundant and impact on social/cultural, human health, economic and/or environmental values can be considered invasive marine species (IMS).

During the Petroleum Activity, vessel activities that have the potential to lead to the introduction of IMS are:

- discharge of ballast water from vessels
- vessel interactions with fixed infrastructure (e.g. GWA platform).

Consequence assessment

IMS have historically been introduced and translocated around Australia by a variety of human means including biofouling and ballast water. Species of concern are those that:

- are not native to the region
- are likely to survive and establish in the region
- are able to spread by human mediated or natural means.

Species of concern vary from one region to another, depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type. These factors dictate their survival and invasive capabilities.

Introducing IMS into the local marine environment may alter the ecosystem, as IMS have characteristics that make them superior (in a survival and/or reproductive sense) to indigenous species. They may prey upon local species (which had previously not been subject to this kind of predation and therefore not have evolved protective measures against the attack), they may outcompete indigenous species for food, space or light and can also interbreed with local species, creating hybrids such that the endemic species is lost.

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g. shellfish stocks). IMS have proven particularly difficult to eradicate from areas, once established. If the introduction is captured early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life.

Despite the potential high consequence of the establishment of a marine pest within a high value environment as a result of introduction, unlike coastal or sheltered nearshore waters, the deep offshore open waters of the Operational Area are deep and are not conducive to the settlement and establishment of IMS (Geiling 2014), due to the lack of light or suitable habitat to sustain growth or survival. The Petroleum Activity will be undertaken in an open ocean, offshore location more than 12 nm from shorelines and/or critical habitat and in waters approximately 74 m to 200 m deep. While Unnamed Shoal is shallower (~40-50 m) and is within the Operational Area, it is approximately 1.9 km north of the nearest flowline.

Table 6-35 provides an assessment of the IMS impacts and risks associated with the Petroleum Activity.

Epifauna and infauna

Epifauna and infauna are susceptible to impacts from IMS due to the risk of changes to the ecosystem dynamics such as competition for resources and predation.

Discrete areas of hard substrate hosting sessile filter feeding communities that may be vulnerable to impacts of IMS may also be associated within the Ancient Coastline at the 125 m Depth Contour KEF, which overlaps the Operational Area. While the vessels used for the Petroleum Activity have the potential to introduce IMS into the area, the deep offshore open waters of the Operational Area are not conducive to the settlement and establishment of IMS (Geiling 2014). The Operational Area is in an offshore continental shelf location more than 12 nm from shorelines and/or critical habitat and in waters approximately 74 m to 200 m deep.

The likelihood of IMS being introduced and establishing viable populations within the Operational Area or immediate surrounds is considered highly unlikely, with the potential settlement on subsea infrastructure not expected. Risks to epifauna and infauna, if realised, may lead to slight and low-level impacts. Table 6-35 provides an assessment of the IMS impacts and risks associated with the Petroleum Activity.

Values and sensitivities

Ancient Coastline at 125 m Depth Contour

The Operational Area overlaps the Ancient Coastline at 125 m Depth Contour KEF, however no significant escarpments, species of conservation significance, emergent features or areas of high biological productivity characteristically associated with this KEF have been observed in the Operational Area (Section 4.7). As evaluated above, the likelihood of IMS being introduced and establishing viable populations within the Operational Area or immediate surrounds is considered highly unlikely, with the potential settlement on subsea infrastructure not expected. Risks to this regional-scale KEF, if realised may lead to slight and low-level impacts. Table 6-35 provides an assessment of the IMS impacts and risks associated with the Petroleum Activity.

Montebello Marine Park

While the Operational Area overlaps the Montebello Marine Park, subsea infrastructure associated with the Petroleum Activity does not. As evaluated above, the likelihood of IMS being introduced and establishing viable populations

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within the Operational Area or immediate surrounds is considered highly unlikely, with the potential settlement on subsea infrastructure not expected. Risks to the marine park, if realised may lead to slight and low-level impacts. Table 6-35 provides an assessment of the IMS impacts and risks associated with the Petroleum Activity.

Industry, shipping, defence

The establishment of IMS has the potential to cause changes to the functions, interests or activities of other users through indirect impact such as changes to fisheries target species resulting in economic and social implications, or due to compromised reputation to the oil and gas industry.

Given the low likelihood of IMS translocation to, and colonisation of environments within the Operational Area, the Petroleum Activity is highly unlikely to result in establishment of IMS, and as such not adversely affect other marine user activities in the region. Risks to other users, if realised, may lead to slight and low-level impacts. Table 6-35 provides an assessment of the IMS impacts and risks associated with the Petroleum Activity.

As a result of the assessment presented in Table 6-35, potential consequences if the risk of IMS is realised, are assessed as 'E', a slight, short-term impact (<1 year) on species, habitat (but not affecting ecosystem function), physical or biological attribute) and a likelihood as Highly Unlikely (1), resulting in an overall low risk rating following the implementation of identified controls.

Table 6-35: Assessment of the impacts and risks of invasive marine species introduction associated with the Petroleum Activity

IMS Introduction Aspect	Credibility of Introduction	Consequence of Introduction	Likelihood
Transfer of IMS from infected vessel to Operational Area and establishment on the seafloor or subsea infrastructure.	**Not Credible** The deep offshore open waters of the Operational Area, away from shorelines and/or critical habitat, more than 12 nm from a shore and in waters 74 – 200 m deep are not conducive to the settlement and establishment of IMS.	N/A	N/A
Transfer of IMS from infected vessel to and subsequent establishment on the GWA facility.	**Credible** There is potential for the transfer of marine pests to occur.	If IMS were to establish this would potentially result in fouling of intakes (depending on the pest introduced) and would likely result in the quarantine of the GWA facility until eradication could occur (through cleaning and treatment of infected areas), which would be costly to undertake. **Minor (D) – Reputation and Brand** Such introduction would be expected to have Minor (D) impact to Woodside's reputation and brand, and close scrutiny of asset level operations or future proposals. **Slight (E) – Environment** Environmental consequence of introduction of IMS to the GWA facility is considered Slight (E), localised and would relate to habitat	**Highly Unlikely (1)** Interactions between the GWA facility and support vessels will be limited during the Petroleum Activity, with a 500 m safety exclusion zones being adhered too. Spread of marine pests via ballast water or spawning in these open ocean environments is considered Highly Unlikely (1).

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		directly on the GWA facility.	
Transfer of IMS from infected vessel to and subsequent establishment on GWA facility, then transfer of IMS to a secondary vessel from the GWA facility.	**Not Credible** Risk is considered so remote that it is not credible for the purposes of the Petroleum Activity. The transfer of a marine pest from an infected vessel to the GWA facility was already considered highly unlikely given the offshore open ocean environment. For marine pests to then establish into a mature spawning population on GWA and then transfer to another support vessel is not considered credible (i.e. beyond the Woodside risk matrix). The GWA facility is located in an offshore, open ocean, deep environment. Support vessels only spend short periods of time alongside GWA (i.e. during backloading or bunkering activities); with the exception of the ASV which may be connected to the GWA platform for up to 3 months, if deployed. There is also no direct contact (i.e. they are not tied up alongside) during these activities. It is also noted that Woodside has been conducting marine vessel movements between the GWA facility and WA ports (such as Dampier), for a long period of time and no IMS has been detected in these ports (DoF 2017).	N/A	N/A

Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
Legislation, codes and standards				
Vessels will manage their ballast water using one of the approved	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of transferring marine pests between vessels	Controls based on legislative requirements under the *Biosecurity*	Yes **C 23.1**

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
ballast water management options, as outlined in the Australian Ballast Water Management Requirements. This applies to all vessels that will enter the Operational Area, including those carrying out activities outside of Australian Territorial Seas (>12 nm).		within the Operational Area. No change in consequence would occur.	*Act 2015* – must be adopted.	
Vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of transfer of marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the *Biosecurity Act 2015* – must be adopted.	Yes **C 23.2**
Good practice				
Woodside's IMS risk assessment process (Section 7.2.4) will be applied to the ASV, vessels and immersible equipment that enter the Operational Area, unless exempt Based on the outcomes of each IMS risk assessment, management options commensurate with the risk will be implemented to minimise the likelihood of IMS being introduced.	F: Yes. CS: Good practice implemented across all Woodside operations.	The IMS risk assessment process will identify potential risks and additional controls implemented accordingly. In doing so, the likelihood of transferring marine pests between vessels within the Operational Area is reduced. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 23.3**
Professional judgement – Eliminate				
Not using support vessels.	F: No. No alternative to the use of vessels during the Petroleum Activity was identified, given vessels must be used to undertake the Petroleum Activity. There is no feasible means to eliminate the source of risk. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
No discharge of ballast water during the Petroleum Activity.	F: Yes however ballast water discharges are critical for maintaining	Elimination of the potential introduction of	Legislative requirements (**C 23.1**) are required to be	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
	vessel stability. Given the nature of the Petroleum Activity, the use of ballast (including the potential discharge of ballast water) is considered to be a safety critical requirement. CS: Not assessed, to safety critical element.	IMS, if present within the ballast water.	implemented to manage potential ballast water risk to low. Noting the safety critical element and the adopted control (**C 23.1**) this is disproportionate to the risk reduction.	
Infield IMS inspection of the GWA platform or the ASV upon arrival into Operational Area.	F: Yes, implementation of a survey is considered feasible for vessels entering the Operational Area. Any IMS survey work would have to be carried out via ROV as diving is not included in the in-force safety case under OPGGS (Safety) Regulations. CS: Significant cost. The survey would require mobilisation of specialist personnel and equipment, vessel time, and additional offshore operations. Ability to access some niches maybe be limited due to in water access and safety restrictions i.e. thrusters on the ASV, caissons on GWA platform and facility simultaneous operations hazards	No benefit in risk reduction would be achieved because IMS risk has already been managed through implementation of the Woodside's IMS risk assessment process and the Biosecurity Act 2015. An infield inspection would not materially reduce the residual likelihood or consequence of IMS introduction beyond the existing controls.	Disproportionate. Any additional benefit gained through implementation of this control is disproportionate to the cost and effort required to undertake this control infield. The IMS risk has already been managed through controls adopted (and noting already incurred cost through implementation of Woodside's IMS risk assessment process (i.e. inspections and cleaning where risk warrants)).	No
Professional judgement – Substitute				
Source vessels based in Australia only.	F: Potentially. Limiting activities to only use local vessels could potentially pose a significant risk in terms of time and duration of sourcing a vessel, as well as the ability of the local vessels to perform the required tasks. While the Petroleum Activity will attempt to source support vessels locally it is not always possible. Availability cannot always be	Sourcing vessels from within Australian will reduce the likelihood of IMS from outside Australian waters, however, it does not reduce the likelihood of introduction of species native to Australia but alien to the Petroleum Activity and NWMR, or of IMS that have established elsewhere in Australia. The consequence is unchanged.	Disproportionate. Sourcing vessels from Australian waters may result in a reduction in the likelihood of IMS introduction to the Petroleum Activity; however, it does not eliminate the risk. Furthermore, the cost to implement this control could be high, given the potential schedule impacts due to restrictions of vessel hire opportunities.	No

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Demonstration of ALARP				
Control considered	***Control feasibility (F) and cost/sacrifice (CS)***	***Benefit in risk reduction***	***Proportionality***	***Control adopted***
	guaranteed when considered competing oil and gas activities in the region. In addition, sourcing Australian based vessels only will cause increases in cost due to pressures of vessel availability. CS: Significant cost and schedule impacts due to restrictions of vessel hire opportunities.			
Inspecting all vessels for IMS.	F: Yes. Approach to inspect vessels is feasible. CS: Significant cost and schedule impacts. Thorough inspections require vessels to be removed from the sea (e.g. slipped or dry docked) and examined by an IMS expert. This process incurs significant financial and schedule sacrifices. Timely vessel-based support is integral to the safe and efficient operation of the facility and subsea infrastructure. In addition, Woodside's IMS risk assessment process is seen to be more cost-effective as this control allows Woodside to manage the introduction of marine pests through biofouling, while targeting its efforts and resources to areas of greatest concern.	Inspecting all vessels for IMS would reduce the likelihood of IMS being introduced to the Operational Area. However, this reduction is unlikely to be significant, given the other control measures implemented. No change in consequence would occur.	Disproportionate. The cost/sacrifice is grossly disproportionate to the benefit gained.	No
Professional judgement – Engineered Solution				
None identified.				
ALARP statement: On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) and Woodside's criteria for demonstrating ALARP (Section 2.6.1), Woodside considers the adopted controls appropriate to manage the impacts and risks of IMS introduction. As no reasonable additional/alternative controls were identified that would further reduce the impacts and risks without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.				

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Demonstration of acceptability
Acceptability statement: The risk assessment demonstrates that, with the adopted controls, there is a low residual risk of IMS introduction, establishment and spread to the Operational Area. Consistent with NOPSEMA guidance, the risk assessment identified key risk factors and informed appropriate management measures to minimise the risk of marine pest introduction, establishment and spread (NOPSEMA, 2026). This approach aligns with the MarinePestPlan 2018–2023, which establishes a national objective to minimise the risk of marine pest introduction, establishment and spread (Commonwealth of Australia, 2018b). In this context, "introduction" represents the risk event (translocation of marine pest species), whereas material environmental impact is contingent on subsequent "establishment" (survival, reproduction and persistence). The low residual risk to environmental receptors is acceptable (see risk ratings matrix in Table 2-4), because it represents a level at which the potential risk can be effectively managed by adhering to applicable legislative requirements, industry guidelines, and/or internal Woodside procedures (Section 2.6.2). At this risk level the likelihood of the unplanned event resulting in a minor environmental consequence (D or below) is remote (see likelihood levels in Table 2-3). IMS risks are managed across the full continuum of introduction, establishment and spread, and recognising that ecological impacts arise only where establishment occurs (Commonwealth of Australia, 2013), the adopted controls are designed to minimise both the likelihood of introduction and the potential for establishment of IMS (NOPSEMA, 2026). Further opportunities to reduce risks have been considered above, and the selected controls reflect good industry practice and comply with applicable legislative requirements, including the Biosecurity Act 2015. In line with national guidance (Commonwealth of Australia, 2013; Commonwealth of Australia, 2018b; NOPSEMA, 2026) the EPO for this risk sets a level of performance preventing the introduction of invasive marine species to and within the Operational Area and focuses on prevention through the management of vessel biofouling and ballast water. On the basis of the assessment outcomes, use of the relevant tools appropriate to the decision type (i.e. Decision Type A; Section 2.4.4.2) Woodside considers the adopted controls appropriate so that IMS risks are reduced to an acceptable level and that the EPO reflects that level. Compliance with the adopted controls will demonstrates that the EPO has been met.

EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
EPO 23 No introduction of IMS into the Operational Area as a result of the Petroleum Activity.	**C 23.1** Vessels will manage their ballast water using one of the approved ballast water management options, as outlined in the Australian Ballast Water Management Requirements. This applies to all vessels that will enter the Operational Area, including those carrying out activities outside of Australian Territorial Seas (>12nm).	**PS 23.1** Prevents the translocation of IMS within the vessel's ballast water from high-risk locations to the Operational area.	**MC 23.1.1** Ballast Water Records maintained by vessels which verifies compliance against Australian Ballast Water Management Requirements.
	C 23.2 Vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	**PS 23.2** Compliance with Australian Biofouling Management Requirements (as defined under the Biosecurity Act) to prevent the introduction of IMS.	**MC 23.2.1** Woodside Invasive Marine Species Vessel and Equipment Questionnaire details ballast water management and internal biofouling treatment systems.
	C 23.3 Woodside's IMS risk assessment process will be applied to support vessels	**PS 23.3.1** Before entering the Operational Area, vessels and relevant immersible	**MC 23.3.1** Records of IMS Risk Assessments maintained for all vessels and relevant

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EPOs, EPS and MC			
Environmental performance outcomes	***Controls***	***Environmental performance standards***	***Measurement criteria***
	and immersible equipment that enter the Operational Area, unless exempt (Section 7.2.4). Based on the outcomes, management options commensurate with the risk will be implemented to minimise the likelihood of IMS being introduced.	equipment are determined to be low[103] risk of introducing IMS of concern.	immersible equipment, entering the Operational Area to undertake the Petroleum Activity.
		PS 23.3.2 In accordance with Woodside's IMS risk assessment process, the IMS risk assessments will be undertaken by an authorised Environment Adviser who has completed relevant Woodside IMS training or by qualified and experienced IMS inspector.	**MC 23.3.2** Records confirm that the IMS risk assessments undertaken by an Environment Adviser or IMS inspector (as relevant).

[103] Low risk of introducing IMS of concern is defined as either no additional management measures required or, management measures have been applied to reduce the risk.

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6.10 Recovery plan and threat abatement assessment

This section describes the assessment that Woodside has undertaken to demonstrate that the Petroleum Activity is not inconsistent with any relevant recovery plans or threat abatement plans. For the purposes of this assessment, the relevant Part 13 statutory instruments (recovery plans and threat abatement plans) are:

- Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017)
- Conservation Management Plan for the Blue Whale 2015–2025 (Commonwealth of Australia 2015a)
- National Recovery Plan for the Southern Right Whale (DCCEEW 2024a)
- Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (Commonwealth of Australia, 2014)
- Sawfishes and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
- Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (Commonwealth of Australia, 2018a).

Table 6-36 lists the objectives and (where relevant) the action areas of these plans and also describes whether these objectives/action areas apply to government, the titleholder, and/or the Petroleum Activity. For those objectives/action areas applicable to the Petroleum Activity, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are clearly inconsistent with that action or not. The results of this assessment against relevant actions are presented in Table 6-37 to Table 6-42.

In addition, this section also lists the relevant requirements and objectives of the management plans and frameworks related to the Murujuga Cultural Landscape World Heritage Area and provides a demonstration that the Petroleum Activity is not inconsistent with these requirements and objectives (Table 6-43).

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Table 6-36: Identification of Applicability of Recovery Plan and Threat Abatement Plan Objectives and Action Areas

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Marine Turtle Recovery Plan			
Long-term Recovery Objective: Minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles	Y		
The management of marine turtles is supported	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described	Y	Y	
Action Areas			
A. Assessing and addressing threats			
A1. Maintain and improve efficacy of legal and management protection	Y		
A2. Adaptatively manage turtle stocks to reduce risk and build resilience to climate change and variability	Y	Y	Y
A3. Reduce the impacts of marine debris	Y	Y	Y
A4. Minimise chemical and terrestrial discharge	Y	Y	Y
A5. Address international take within and outside Australia's jurisdiction	Y		
A6. Reduce impacts from terrestrial predation	Y		
A7. Reduce international and domestic fisheries bycatch	Y		
A8. Minimise light pollution	Y	Y	Y
A9. Address the impacts of coastal development/infrastructure and dredging and trawling	Y	Y	
A10. Maintain and improve sustainable Indigenous management of marine turtles	Y		

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
B. Enabling and measuring recovery			
B1. Determine trends in index beaches	Y	Y	
B2. Understand population demographics at key foraging grounds	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks	Y	Y	Y
Blue Whale Conservation Management Plan			
Long-term recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
The spatial and temporal distribution, identification of BIAs, and population structure of blue whales in Australian waters is described	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Action Areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection	Y		
A.2: Assessing and addressing anthropogenic noise	Y	Y	Y
A.3: Understanding impacts of climate variability and change	Y	Y	Y
A.4: Minimising vessel collisions	Y	Y	Y
B. Enabling and Measuring Recovery			
B.1: Measuring and monitoring population recovery	Y		
B.2: Investigating population structure	Y		
B.3: Describing spatial and temporal distribution and defining biologically important habitat	Y	Y	Y

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Southern Right Whale Recovery Plan			
Long-term vision: increase population to a level that the conservation status has improved and the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	Y	Y	Y
Interim Recovery Objectives			
Current levels of Commonwealth and State legislative and management protection for southern right whales are implemented, maintained, or improved, so threats continue to be managed and reduced over the life of the plan	Y		
Anthropogenic threats are managed consistent with ecologically sustainable principles to facilitate recovery of southern right whales	Y	Y	Y
Population dynamics, including demographics, distribution, residency, and coastal movement across the species range are monitored and quantified using robust, standardised, best-practice methodology to assess population recovery	Y		
The population structure in Australian waters is clearly characterised to evaluate the degree to which the western and eastern populations are separate populations and inform the degree of connectivity with other southern right whale populations	Y		
Capability of First Nation Australians, research, citizen science, and general community groups is improved to assist in addressing recovery actions of southern right whales in Australia.	Y		
Action Areas			
Assess and address key threats			
A1: Maintain, implement and improve efficacy of current legislative and management protection for southern right whales.	Y		
A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	Y	Y	Y
A3: Understand impacts of climate variability and anthropogenic climate change on the species biology and population recovery.	Y	Y	Y
A4: Manage and mitigate the threat of entanglements from commercial active or discarded fishing gear throughout the species' range in Australian waters.	Y		
A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.	Y	Y	Y
A6: Manage, minimise and mitigate the threat of vessel strike.	Y	Y	Y

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Measure recovery			
B1: Measure and monitor population demographic and recovery	Y		
B2: Characterise population structure	Y		
B3: Determine migratory paths and offshore distribution	Y		
B4: Improve capability of First Nation Australians, research, citizen science, and general community groups to assist management of southern right whales	Y		
Grey Nurse Shark Recovery Plan			
Overarching Objective			
To assist the recovery of the grey nurse shark in the wild, throughout its range in Australian waters, with a view to: improving the population status, leading to future removal of the grey nurse shark from the threatened species list of the EPBC Act ensuring that anthropogenic activities do not hinder the recovery of the grey nurse shark in the near future, or impact on the conservation status of the species in the future	Y	Y	Y
Specific Objectives			
Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters	Y		
Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
Where practicable, minimise the impact of shark control activities on the grey nurse shark	Y		
Investigate and manage the impact of ecotourism on the grey nurse shark	Y		
Manage the impact of aquarium collection on the grey nurse shark	Y		
Improve understanding of the threat of pollution and disease to the grey nurse shark	Y	Y	Y
Continue to identify and protect habitat critical to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas	Y	Y	

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Continue to develop and implement research programs to support the conservation of the grey nurse shark	Y	Y	
Promote community education and awareness in relation to grey nurse shark conservation and management	Y		
Sawfish and River Sharks Recovery Plan			
Primary Objective			
To assist the recovery of sawfish and river sharks in Australian waters with a view to: improving the population status leading to the removal of the sawfish and river shark species from the threatened species list of the EPBC Act ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future	Y	Y	Y
Specific Objectives			
Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species	Y		
Improve the information base to allow the development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species	Y		
Develop research programs to assist conservation of sawfish and river shark species	Y	Y	
Improve community understanding and awareness in relation to sawfish and river shark conservation and management	Y		

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activity***
Marine Debris Threat Abatement Plan			
Objectives			
Contribute to long-term prevention of the incidence of marine debris	Y	Y	
Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
Remove existing marine debris	Y		
Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change	Y		

Table 6-37: Assessment against relevant actions of the Marine Turtle Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Turtle Recovery Plan	**Action Area A3:** Reduce the impacts from marine debris	**Action:** Support the implementation of the Marine Debris Threat Abatement Plan (TAP) Priority actions at stock level: G-NWS – Understand the threat posed to this stock by marine debris LH-WA – Determine the extent to which marine debris is impacting loggerhead turtles F-Pil – no relevant actions	Refer Section 6.9.2. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to marine turtles. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activity.	**EPO 21** **C 21.1, 21.2, 21.3** **PS 21.1, 21.2, 21.3**

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Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	Action Area A4: Minimise chemical and terrestrial discharge	**Action:** Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs Priority actions at stock level: G-NWS – Ensure that spill risk strategies and response programs include management for turtles and their habitats LH-WA & F-Pil – Ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals	Refer Sections 6.7, 6.8 and 6.9. **Not inconsistent assessment:** The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to marine turtles. Spill risk strategies and response program include management measures for turtles and their nesting habitats.	Refer Sections 6.7, 6.8 and 6.9. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are present in Appendix G
	Action Area A8: Minimise light pollution	**Action:** Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats Priority actions at stock level: G-NWS – as above LH-WA – no relevant actions F-Pil – Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue	Refer Section 6.7.9. **Not inconsistent assessment:** The assessment of light emissions has considered the potential impacts to marine turtles. Internesting, mating, foraging or migrating turtles are not impacted by light from offshore vessels. Based on the frequency and nature of IMMR activities, the impacts to adult turtles moving through the Operational Area from vessel lighting are expected to be localised and temporary with no lasting effect.	**EPO 12** **C 12.2, 12.3** **PS 12.2, 12.3**

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Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	Action Area B1: Determine trends at index beaches	**Action:** Maintain or establish long-term monitoring programs at index beaches to collect standardised data critical for determining stock trends, including data on hatchling production Priority actions at stock level: G-NWS – Continue long-term monitoring of index beaches LH-WA – Continue long-term monitoring of nesting and foraging populations F-Pil – no relevant actions	**Not inconsistent assessment:** Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program.	N/A
	Action Area B3: Address information gaps to better facilitate the recovery of marine turtle stocks	**Action:** Understand the impacts of anthropogenic noise on marine turtle behaviour and biology Priority actions at stock level: G-NWS – Given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise – Investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the NWS stock to other stocks LH-WA – no relevant actions F-Pil – no relevant actions	Refer Sections 6.7.3. **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to marine turtles. IMMR related noise is not expected to result in behavioural response, injury or mortality of individuals, or any other lasting effect.	**EPO 4a and EPO 4b** **C 4.3** **PS 4.3**
Assessment Summary The Marine Turtle Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-38: Assessment against relevant actions of the Blue Whale Conservation Management Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Blue Whale Conservation Management Plan	**Action Area A.2:** Assessing and addressing anthropogenic noise	**Action 2:** Assessing the effect of anthropogenic noise on blue whale behaviour **Action 3:** Anthropogenic noise in BIAs will be managed such that any blue whale continues to use the area without injury[2], and is not displaced from a foraging area	Refer Section 6.9.3 **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales. Acoustic emissions from support vessels will not cause injury to any pygmy blue whale. There are no known or possible foraging areas for pygmy blue whales within or adjacent to the Operational Area.	**EPO 4a** **C 4.1** **PS 4.1**
	Action Area A.4: Minimising vessel collisions	**Action 3:** Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented	Refer Section 6.9.3. **Not inconsistent assessment:** The assessment of interaction with marine fauna has considered the potential risks to pygmy blue whales. Interactions with pygmy blue whales are highly unlikely to occur, given the low operating speed of support vessels.	**EPO 22** **C 4.1** **PS 4.1**
	Action Area B.3: Describing spatial and temporal distribution and defining biologically important habitat	**Action 2:** Identify migratory pathways between breeding and feeding grounds **Action 3:** Assess timing and residency within BIAs	**Not inconsistent assessment:** Woodside contributes to Action Area B3 via its support of targeted research initiatives (e.g. satellite tracking of pygmy blue whale migratory movements[3]).	N/A
Assessment Summary The Blue Whale Conservation Management Plan has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-39: Assessment against relevant actions of the Southern Right Whale Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
National Recovery Plan for the Southern Right Whale	A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.	Action 1 Coastal and offshore development actions are assessed according to principles of ecological sustainable development to ensure the risk of injury, auditory impairment and/or disturbance to southern right whales is maintained. Action 3 Current information on species' occurrence, particularly in HCTS, BIAs, and historic high use areas, are used to inform planning, assessment, and decision-making on marine infrastructure development actions.	Refer Section 6.9.3 **Not inconsistent assessment:** This EP assesses the potential impacts of the Petroleum Activity and is not expected to result in the risk of injury, auditory impairment and/or disturbance to southern right whales, particularly within the HCTS and BIAs that are located over 200 km from the Operational Area.	**EPO 22** **C 4.1** **PS 4.1**
	A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.	Action 2: Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that it does not prevent any southern right whale from utilising the area or cause auditory impairment. Action 3: Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that the risk of behavioural disturbance is minimised. Action 4: Ensure environmental assessments associated with underwater noise generating activities include consideration of national policy (e.g. EPBC Act Policy Statement 2.1) and guidelines related to managing anthropogenic underwater noise and implement appropriate mitigation measures to reduce risks to southern right whales to the lowest possible level. Action 5: Quantify risks of anthropogenic underwater noise to southern right whales, including studies aimed to measure physiological effects, behavioural disturbance, and changes to acoustic communication (e.g. masking of vocalisations) to whales.	Refer Section 6.7.3 **Not inconsistent assessment:** The assessment of acoustic emissions has considered the potential impacts to southern right whales. The nearest BIAs and HCTS for the southern right whale being over 200 km from the Operational Areas therefore it is not expected that noise from the Petroleum Activity will impact the southern right whales.	**EPO 4a** **C 4.1** **PS 4.1**
	A6: Manage, minimise and	Action 1: Assess risk of vessel strike to southern right whales in BIAs	Refer Section 6.9.3.	N/A

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Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	mitigate the threat of vessel strike.	Action 3: Ensure environmental impact assessments and associated plans consider and quantify the risk of vessel strike and associated potential cumulative risks in BIAs and HCTS/.	**Not inconsistent assessment:** The assessment of interaction with marine fauna has considered the potential risks to southern right whales. The nearest BIAs and HCTS for the southern right whale being over 200 km from the Operational Areas therefore it is not expected that there is a risk of vessel strike.	
Assessment Summary The National Recovery Plan for the Southern Right Whale has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-40: Assessment against relevant actions of the Grey Nurse Shark Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Grey Nurse Shark Recovery Plan	**Objective 7:** Improve understanding of the threat of pollution and disease to the grey nurse shark	**Action 7.1:** Review and assess the potential threat of introduced species, pathogens and pollutants	Refer Section 6.9.2. **Not inconsistent assessment:** This EP includes an assessment of the impacts from accidental release of solid wastes as well as planned discharges of drilling waste on marine species.	**EPO 21** **C 21.1, 21.2, 21.3** **PS 21.1, 21.2, 21.3**
			Refer Sections 6.7, 6.8 and 6.9. **Not inconsistent assessment:** The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to grey nurse sharks. Spill risk strategies and response program include management measures, as identified and required.	Refer Sections 6.7, 6.8 and 6.9. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are present in Appendix G
Assessment Summary The Grey Nurse Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-41: Assessment against relevant actions of the Sawfish and River Shark Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Sawfish and River Shark Recovery Plan	**Objective 5:** Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	**Action 5c:** Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks	Refer Sections 6.7, 6.8 and 6.9. **Not inconsistent assessment:** The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to sawfish and river shark. Spill risk strategies and response program include management measures, as identified and required.	Refer Sections 6.7, 6.8 and 6.9. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activity are present in Appendix G
	Objective 6: Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life	**Action 6a:** Assess the impacts of marine debris including ghost nets, fishing gear and plastics on sawfish and river shark species	Refer Section 6.9.2. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to sawfish. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activity.	**EPO 21** **C 21.1, 21.2, 21.3** **PS 21.1, 21.2, 21.3**
Assessment Summary The Sawfish and River Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

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Table 6-42: Assessment against relevant actions of the Marine Debris Threat Abatement Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Debris TAP	**Objective 2:** Understand the scale of marine plastic and microplastic impact on key species, ecological communities and locations	**Action 2.04:** Build understanding related to plastic and microplastic pollution	Refer Section 6.9.2. **Not inconsistent assessment:** The assessment of the accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to the marine environment. Controls have been implemented to reduce the likelihood of accidental release of solid wastes for the duration of the Petroleum Activity.	**EPO 21** **C 21.1, 21.2, 21.3** **PS 21.1, 21.2, 21.3**
Assessment Summary The Marine Debris TAP has been considered during the assessment of impacts and risks, and the Petroleum Activity is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-43: Assessment against relevant requirements and objectives of management plans and frameworks related to the Murujuga Cultural Landscape World Heritage Area

Relevant requirement and relevant objective	Demonstration the Petroleum Activity is not inconsistent
The Murujuga Cultural Landscape Strategic Management Framework (2022) Protect, conserve and present the potential Outstanding Universal Value of the property Take appropriate scientific, technical, legal, administrative and financial measures necessary for achieving [these objectives]	There is no overlap between the Operational Area and Murujuga Cultural Landscape World Heritage Area Boundary (See Figure 4-17). **EPO 11a and 11b** and their relevant associated controls support the protection and conservation of the universal values, including the Ngarda- Ngarli peoples ongoing connection to Country. Intangible values associated with Murujuga Cultural Landscape (living cultural traditions) are preserved through the ongoing connection the Traditional Custodians maintain with the landscape. Supported by **C 11.1** of this EP, opportunity for consultation is open for the life of the EP with the cultural authority of the MCL (Ngarda-Ngarli people

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Relevant requirement and relevant objective	Demonstration the Petroleum Activity is not inconsistent
Murujuga Cultural Management Plan (2016) To promote effective, integrated and cooperative management between Murujuga National Park and adjacent land managers	represented by the Murujuga Aboriginal Corporation (MAC)) to inform consideration of these values in the context of the Petroleum Activity. **C 10.1** in this EP, aligns with and supports the objectives of the Murujuga Rock Art Strategy/Murujuga Rock Art Monitoring Program through provision of relevant industry information to inform the assessment of potential anthropogenic emissions impacts on rock art. Woodside monitors the outcomes of the MRAMP and assesses relevance to this Petroleum Activity as part of the implementation strategy of this EP (**C 10.1**). As outlined in **C 10.1**, Woodside is committed to complying with the State government's requirements to ensure that activities do not result in the region's emissions exceeding MRAMP EQC Standards. Interim Standards published by MRAMP indicated that activities in the region currently remain below this value. Interim EQC Guidelines exist to guide an ongoing management approach under the MRAMP framework for the region. NOx emissions to the Murujuga airshed are regulated under the EP Act and Ministerial Conditions. The adopted controls- including compliance with Ministerial Statement 1233 (via **C 10.2**)- manage the indirect air emissions associated with onshore process of GWA gas to '*Prevent accelerated weathering of Murujuga rock art or impact to human health from air emissions that result from onshore processing of GWA gas* (**EPO 10**). *Not inconsistent:* Based on the commitments, controls and relevant information stated above, the Petroleum Activity is not inconsistent with goals and objectives of The Murujuga Cultural Landscape Strategic Management Framework (2022) and Murujuga Cultural Management Plan (2016) which aim to protect and conserve the World Heritage values of Murujuga Cultural Landscape.
Murujuga National Park Management Plan (2013, as amended in 2023) To actively manage the Murujuga Land and Sea Country to keep Country healthy and safe. It was identified that to achieve this Murujuga Land and Sea Unit (Ranger Unit with MAC) will: monitor and protect rock art − have access to all information about the effects of industry on Murujuga Country	**C 11.2** of this EP aligns with Woodsides ongoing support into the research and monitoring of, the National Heritage values of the park so activities are carried out in a manner that is not inconsistent with the *Murujuga National Park Management Plan 78*. An ongoing engagement approach with Traditional Custodians (Section 5) and **EPO 11b**, specifically, **C 11.1**- the 'living heritage' management approach have been developed to enable Woodside to manage cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians. This EP includes an assessment of potential impacts on the World Heritage values of the MCL, with relevant controls (**EPO 10**) implemented to prevent unacceptable impacts on the values of the National Park, including rock art. Requirement for appropriate approval process is met by the submission of this EP.

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Relevant requirement and relevant objective	Demonstration the Petroleum Activity is not inconsistent
To ensure that any developments subject to appropriate assessment and approval processes, and do not unacceptably impact on the park's cultural heritage, including the rock art and natural values, in particular its National Heritage and potential World Heritage values or detract from the visitor experience of Murujuga National Park.	*Not inconsistent:* **EPO 10** and **C 11.2** in this EP aligns Woodsides obligation under the Deep Gorge Joint Statement and supports its action to be not inconsistent with the Murujuga National Park Management Plan (78) that protect and conserve the world heritage values of Murujuga Cultural Landscape.

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6.11 Cultural features and heritage values assessment

The identification of cultural features and heritage values of the environment as well as the social, economic and cultural features important to Indigenous people is integral to understanding the environment and any potential impacts and risks to the environment. In line with Woodside's Indigenous Communities Policy (Woodside 2025), Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage). If avoidance is not possible, Woodside will seek to minimise and mitigate any impacts, through consultation with Indigenous communities and Traditional Custodians.

Mitigation of intangible heritage can include any measure or control aimed at ensuring the viability of the cultural heritage and its intergenerational transmission. This can include reducing impacts and risks to environmental features that are associated with intangible cultural heritage (UNESCO, 2003; Australia ICOMOS, 2013).

Values and features of significance identified in Section 4.9 (Table 4-21) as being likely or possible to interact with the Operational Area or EMBA are addressed in the risk assessment below. Management of these risks ensures that Indigenous concerns and interests are adequately acknowledged and protected throughout GWA Operations.

Any action in Australian waters that will or might interact with the seabed could impact UCH, as such, an adequate process of UCH assessment and management is to be undertaken ahead of, and concurrent with, any proposed actions in the near and offshore environment (DCCEEW, 2024b). The impact assessment below considers both Indigenous and historical UCH in order to protect its value for future generations.

Description of source impact/risk (key aspects)
Seabed disturbance Seabed disturbance associated with the Petroleum Activity can occur during operations and other activities including physical presence of the GWA facility and subsea infrastructure and subsea IMMR activities. The presence of subsea infrastructure and the interaction with hydrodynamic processes may result in localised scouring to the seabed and localised sedimentation of fine substrates around infrastructure. IMMR activities and ROV operations will be conducted at routine intervals which can result in seabed disturbance. Refer to Section 6.7.2 for more details. **Acoustic emissions** The GWA facility and subsea infrastructure, support vessels, subsea IMMR activities and helicopters generate noise both in the air and underwater, due to the operation of machinery and propeller movement. Support vessels holding station are considered to be the predominant noise source related to the Petroleum Activity Sound levels will fluctuate over the course of the Petroleum Activity and will depend on concurrent vessel activities. Generally, sound associated with operations of the GWA facility and associated subsea infrastructure will be limited. Short-term increases in sound will occur periodically associated with PSV operations in the vicinity of the GWA facility within the PSZ. Support vessels holding station are considered to be the predominant noise source related to the Petroleum Activity The sound levels and frequencies generated by vessels varies with the size of the vessel, speed, engine type and the activity being undertaken. Large vessels typically produce higher sound levels at lower frequencies than small vessels, although significant variation may be found among vessels within the same group. Sound levels tend to be greatest when engaging the throttle or thrusters, such as use of DP or when vessels are operating under load, compared with slow moving or idling vessels. The greatest sound levels are likely to be associated with vessels using DP thrusters to maintain position on station. Refer to Section 6.7.3 for more details. **Indirect emissions associated with gas processing onshore** Atmospheric emissions (non-greenhouse gas emissions) are gases and particulates from an activity, or piece of machinery, which have a recognised adverse effect on human health and/or flora and fauna. Consideration of potential indirect impacts include those causing a reduction in ambient air quality impacting human health as well as the potential to contribute to accelerated weathering of rock art on the Burrup Peninsula and within the Dampier Archipelago (i.e. Murujuga) are discussed further in Section 6.7.8 **Light emission from GWA facility, vessels and flaring** Lighting is used to ensure a safe working environment to support 24-hour operations and to communicate the presence of the GWA facility and associated vessels to other marine users (i.e. navigational lights). External lighting is located over the entire GWA facility and on vessels, with most external lighting directed towards working areas, such as the production deck of the GWA facility or the back deck of vessels. This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights and is not dissimilar to lighting used for other offshore activities,

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Description of source impact/risk (key aspects)
including fishing and shipping. Lighting is required for the safe operation of the facility and support vessels and cannot reasonably be eliminated. Refer to Section 6.7.9 for more details. **Unplanned hydrocarbon release (basis of EMBA)** The EMBA is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the highly unlikely event of the worst-case unplanned release. The EMBA therefore covers a larger area than the area that would be affected during any one single event. Refer to Section 6.8.3 for more details.

Cultural heritage key receptor impact assessment
The potential environmental impact from the Petroleum Activity to receptors that have a cultural feature or heritage value have been summarised in Table 6-44 and Table 6-45 below to provide the context related cumulative impact on the cultural feature or heritage value. The cultural heritage key receptor impact assessment is linked to biological, ecological and cultural values and the relevant aspects associated with the Petroleum Activity. As interactions with other marine users and MEE common cause failure mechanisms: SCE failure CCE-01 and human error CCE-02 do not affect any biological, ecological or cultural values, it has not been assessed for cultural heritage.

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Table 6-44: Summary of consequence level assessed for individual receptor groups as a result of planned activities

Environmental impact assessment to receptors	Value potentially impacted						
	Marine mammals	*Marine reptiles*	*Fish*	*Seabirds*	*Coral*	*Benthic Habitats e.g. seagrass*	*Shoreline habitats e.g. Mangroves*
Impact Consequence Level							
Section 6.7.2 Physical presence: disturbance to the seabed	N/A	N/A	N/A	N/A	Localised and No lasting effect (F)	Slight and Localised (E)	N/A
Section 6.7.3 Routine acoustic emissions: generations of noise during routine operations	N/A	N/A	No lasting effect (F)	N/A	No lasting effect (F)	N/A	N/A
Section 6.7.4 Routine and non-routine discharges: discharge of hydrocarbons and chemicals during subsea operations and activities	N/A	N/A	N/A	N/A	Localised and Low Level (E)	N/A	N/A
Section 6.7.5 Routine and non-routine operation discharges: produced water	Localised and Low Level (E)	Localised and Low Level (E)	Localised and Low Level (E)	N/A	N/A	N/A	N/A
Section 6.7.6 Routine and Non-routine Discharges: Utility Systems, Drains and Support Vessels	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Section 6.7.8 Routine and atmospheric emissions: indirect emissions associated with gas processing onshore	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Environmental impact assessment to receptors	Value potentially impacted						
	Marine mammals	*Marine reptiles*	*Fish*	*Seabirds*	*Coral*	*Benthic Habitats e.g. seagrass*	*Shoreline habitats e.g. Mangroves*
Section 6.7.9 Routine Light Emissions: Light Emissions from Platform Lighting, Vessel Operations and Operational Flaring	N/A	No lasting effect (F)	No lasting effect (F)	No lasting effect (F)	N/A	N/A	N/A

Table 6-45: Summary of risk ranking assigned for individual receptor groups as a result of unplanned events

Environmental impact assessment to receptorse	*Value potentially impacted*						
	Marine mammals	*Marine reptiles*	*Fish*	*Seabirds*	*Coral*	*Benthic Habitats e.g. seagrass*	*Shoreline habitats e.g. Mangroves*
Risk Rating							
Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7, and 6.8.8 Unplanned hydrocarbon release	Moderate	Moderate	Moderate	Moderate	Low	Low	Low
Section 6.9.1 Unplanned hydrocarbon or chemical release: hydrocarbon release during bunkering/refuelling and chemical release during transfer, storage and use	Low	Moderate	Moderate	Moderate	N/A	N/A	N/A

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Environmental impact assessment to receptorse	*Value potentially impacted*						
	Marine mammals	***Marine reptiles***	***Fish***	***Seabirds***	***Coral***	***Benthic Habitats e.g. seagrass***	***Shoreline habitats e.g. Mangroves***
Section 6.9.2 Unplanned discharges: hazardous and non-hazardous waste management	Moderate	Moderate	Moderate	Moderate	N/A	N/A	N/A
Section 6.9.3 Physical presence: interactions with marine fauna	Low	Low	Low	N/A	N/A	N/A	N/A
Section 6.9.4 Physical presence: introduction of invasive marine species	N/A	N/A	N/A	N/A	Low	N/A	N/A

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Detailed impact and risk assessment
The Petroleum Activity has the potential to impact cultural features and heritage values identified in Table 4-21 in the following ways.
Archaeological heritage and landscapes
Places that are identified in Section 4.9 for their value as archaeological sites are assumed to be at risk where there is potential for impact to the tangible or scientific elements of that place. This could include physical damage or disturbance to the archaeological integrity of a place. **Coastal/island archaeological sites (fish traps and petroglyphs)** No coastal areas or islands are present within the Operational Area. A review of the DPLH's Aboriginal Heritage Inquiry System identified 56 Registered Heritage Places and 58 Lodged Aboriginal sites within the EMBA. These locations do exist within the EMBA boundary. However, given the EMBA is driven by an unplanned hydrocarbon release there is no anticipated impact pathway from this activity to onshore archaeological sites above highest astronomical tide (HAT). Archaeological sites may exist in intertidal landscapes within the EMBA and may be exposed to hydrocarbons from an unplanned release. However, there is no anticipated impact pathway from the presence of hydrocarbons on archaeological values, as this is not expected to impact the fabric or context of sites on an exposed shoreline site. Impacts to the heritage value of fish traps from an unplanned hydrocarbon release may occur indirectly through impacts to fish. However, it is expected that continued use of fish traps beyond their archaeological value will be preserved where fish species and distribution are maintained at a population level. With regard to fish, refer to species specific assessment below for further information, in addition to the impact and risk assessment in Sections 6.7, 6.8, and 6.9 respectively. **Submerged archaeological sites** No archaeological sites have been identified beyond terrestrial or intertidal areas, with the exception of two sites at Murujuga in Cape Bruguieres channel and Flying Foam Passage (Benjamin et al. 2020; Benjamin et al 2023), which are outside of the EMBA. Additionally, volcanic rock which may contain petroglyphs does not occur within the Operational Area. Nevertheless, cultural heritage values may exist on the seabed, these include both unidentified shipwrecks and Indigenous cultural material. The OA overlaps the submerged landscape, which is defined as the area from the WA coast to the Ancient Coastline at 125 m Depth Contour KEF. This area has been identified as having the potential for Indigenous archaeological heritage material to exist on the seabed. All actions involving seabed contact, and most actions undertaken in proximity to the seabed, have potential to cause adverse impact to UCH if present (DCCEEW 2024b). Planned activities may result in seabed contact. Woodside therefore engages a qualified consultant to undertake a desktop assessment of the potential for submerged archaeological material in areas that have not been subject to previous disturbance, using available geophysical and bathymetric data. This approach is consistent with Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW 2024b). Planned assessments will identify any presence of submerged heritage values prior to undertaking activities. Known submerged heritage, including archaeological sites, may be protected subject to declarations under the Aboriginal and Torres Strait Islander Heritage Protection Act 1984, Underwater Cultural Heritage Act 2018 or EPBC Act 1999. Submerged archaeological sites (locations undefined) may exist on the Submerged Landscape within the broader EMBA. However, given the EMBA is driven by an unplanned hydrocarbon release, it is not expected to impact the seabed or archaeological material on or within it. Therefore, there is no anticipated impact pathway to submerged archaeological sites in the broader EMBA from the Petroleum Activity. Woodside understands there is no Indigenous archaeology known to exist within the OA and no areas subject to declarations or prescriptions under these Acts are located within the OA. No submerged sites of significance within the OA were identified by Traditional Custodians during consultation while preparing this EP. In the event that unidentified cultural heritage is encountered it will be managed in accordance with the Unexpected Finds Procedure detailed Section 7.2.5 and applicable legislative obligations. **Murujuga Cultural Landscape** Murujuga (Burrup Peninsula), including the Murujuga National Park and World Heritage Listing is described in Appendix C. The Traditional Owners of Murujuga have a deep cultural and spiritual connection to the rock art of the Burrup Peninsula, which provides a record of Aboriginal lore, dreamtime stories, customs, and local knowledge of the land and its resources (DWER 2019). Safeguarding the Murujuga Cultural Landscape (MCL) and its relevant OUV are considered under a number of relevant management plans (See Appendix C and Section 6.7.8). Cultural features and heritage values associated with Murujuga petroglyphs are outlined in Appendix C and consideration of potential for indirect impact from atmospheric emissions associated with onshore processing of GWA gas presented in Section 6.7.8. Onshore processing of LNG from the Petroleum Activity will occur onshore on Murujuga, which has a high concentration of rock art sites (estimated to exceed a million examples (DBCA & MAC 2024)) with significant local cultural and spiritual values in addition to their inclusion on Australia's National Heritage List and UNESCO World

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Heritage List. Woodside onshore operations at KGP (which receives gas from GWA) are managed via Cultural Heritage Management Plans as implementation conditions required by EPA Act (Pt IV) Ministerial Conditions.

Ministerial Statement 1233 (North West Shelf Project Extension Proposal) Condition section 4 set out Cultural Heritage Outcomes and Objectives to be achieved including (but not limited to):

- allowing Traditional Owner and Custodian access to enable traditional activities and connection to culturally significant heritage areas within the development envelopes
- avoid where possible, and otherwise minimise direct impacts to social, cultural, heritage and archaeological values within the development envelopes

Conditions require implementation of the North West Shelf Project Extension Cultural Heritage Management Plan (CHMP) (2021), including further revision in consultation with Murujuga Key Stakeholders. The plan is required to include elements (not limited to); a framework for ongoing consultation, and operational environmental management activities, monitoring, targets, management actions and reporting relevant to cultural heritage. Related air quality management conditions in MS1233 are outlined in Section 6.7.8.

These conditions support the management and recognition of Murujuga Cultural Landscape OUV related to the NWS Operations. The NWS CHMP (2021) provides management provisions and actions including provide access for Traditional Owners to Aboriginal cultural heritage sites within the Proposal development envelope when requested [MA2], the adoption of technologies to prevent impacts to terrestrial and nearshore vegetation of heritage and conservation value [MA4] and support the implementation of, and participate in, the DWER Murujuga Rock Art Strategy [MA6] (refer to Section 6.7.8).

Intangible values associated with MCL (Living cultural traditions) are preserved through the ongoing connection the Traditional Owners maintain with the landscape. Woodside maintains an ongoing relationship with cultural authority of the MCL to ensure these values are uninterrupted by the Petroleum Activity. Additionally, Woodside actively provides support to the Murujuga Land and Sea Unit to assist in its ongoing management of Country and Sea Country associated with the MCL.

There is no overlap between the Operational Area and the boundary of the MCL World Heritage Area. The Petroleum Activity is not inconsistent with the applicable management plans and legislative requirements associated with the protection and conservation of the MCL (See associated rock art impact assessment in Section 6.7.8); hence no impacts are expected to the MCL and its OUV are expected to be maintained.

Intangible heritage

Intangible values that are identified in Section 4.9 are assumed to be at risk where there is potential for impact to the spiritual connections, features and/or places associated with the value. Impacts to intangible heritage can be individualised; the assessment below does not account for this variability but aims to assess widespread impacts to general intangible values.

Cultural obligations to care for Country/Access to Country

Potential impact pathways to the rights and obligations of Traditional Custodians to care for Sea Country may be directly associated with environmental impacts, or by excluding Traditional Custodians from Sea Country (e.g. by restricting access) or decision-making processes (e.g. by not conducting ongoing consultation). Restrictions on access may be temporary (e.g. where exclusion zones exist around activities for safety reasons) or permanent (e.g. where infrastructure obstructs access or navigation). Such impacts are limited to areas that have been traditionally accessed by Traditional Custodians and are expected to be concentrated in shoreline environments. There is potential for shoreline accumulation of hydrocarbons within the EMBA, therefore additional controls, including engagement of relevant cultural authorities in the event of a spill, have been adopted to mitigate the risk and are not expected to result in the loss of heritage value, cultural practice, knowledge transmission, or cultural obligations at a broader cultural landscape scale. Ongoing consultation is also intended to facilitate access arrangements where feasibly safe to do so, and to support appropriately informed decision-making processes.

Creation/dreaming sites; ceremonial sites; sacred sites; ancestral beings

Activities that physically alter landscape features may be assumed to potentially impact values of creation/dreaming sites, sacred sites or ancestral beings. Activities that prevent the performance of ceremony at these sites will directly impact its values. This is anticipated to be focussed on areas adjacent to the coast. There is no known creation or dreaming sites identified within the Operational Area during consultation or through publicly available literature. With consideration to the limited extent of the proposed activity, impacts to creation/dreaming or ceremonial sites are not expected.

Kinship systems and totemic species

Marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that “skin group” from hunting or eating that same species (Juluwarlu 2004). It is therefore inferred that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals. The impacts and risks associated with the Petroleum Activity are not considered to be ecologically significant at a population level. As such, cultural values associated with kinship systems and totemic species are expected to be maintained.

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Resource collection

Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, marine species (as resources) will be impacted where there is an impact at the species/population level. However, the impacts and risks associated with the Petroleum Activity are not considered to be ecologically significant at a population level. As such, cultural values associated with kinship systems and totemic species are expected to be maintained.

Songlines

Songlines can become lost, fragmented, or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. It is noted that oil and gas infrastructure exists in many areas of the North West Shelf, and that songlines are still acknowledged and recognised. It is inferred that if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. "weaken" a songline) rather than binary or absolute (i.e. destroy a songline).

Knowledge of Country/customary law and transfer of knowledge/ Connection to Country

Where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge this may damage connection to Country (McDonald and Phillips, 2021). Direct impact to communities practicing traditional skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in species population. Furthermore, limitations on access to sites or disruption/relocation of Indigenous communities may have implications for the preservation of Indigenous knowledge. Impacts and risks from the Petroleum Activity are not considered to be ecologically significant at a population level and hence are not expected to impact the value of marine species. It is therefore not expected that the Petroleum Activity will displace or disrupt a Traditional Custodians capacity to pass on knowledge related to marine species or knowledge related to traditional culture/ technical skills.

Traditional Custodians maintain an ongoing connection to Sea Country through living cultural traditions, including the use of resources and the practice of cultural activities such as ceremonies and Dreaming stories. Woodside invites ongoing engagement with relevant Traditional Custodian groups to understand how this connection can remain uninterrupted during the Petroleum Activity. Supported further by the environmental management controls outlined in Sections 6.7, 6.8 and 6.9, no adverse impacts to intangible cultural values associated with Sea Country are expected from the Petroleum Activity.

Marine ecosystems and species

Marine ecosystems may hold both cultural and environmental value, with cultural and environmental values intrinsically linked (DCCEEW 2023; MAC 2022 as cited in Woodside 2023a). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country and the seascape which Traditional Custodians view, interact with or hold knowledge of.

Fresh hydrocarbons (i.e. typically in the vicinity of the release location) may have a higher potential to cause toxic effects when ingested, while weathered hydrocarbons are considered to be less likely to result in toxic effects. As such, the risk of hydrocarbon ingestion is low. The migration of culturally significant marine fauna (marine reptiles, fish and mammals) protracts through time and space (i.e. the entire population will not be within the EMBA), and as such, a spill from the loss of well integrity is unlikely to affect an entire population.

A worst-case hydrocarbon spill scenario has the potential to result in major long-term impacts to offshore marine fauna species, with consequence severity dependent on the actual timing, duration and extent of a spill in relation to species' migratory movements and distributions. Such an event has been assessed above as highly unlikely and relevant EPOs and its corresponding controls have been implemented to mitigate such a risk (See Section 6.8 and Section 6.9). There is also potential for shoreline accumulation of hydrocarbons within the EMBA, therefore additional controls, including engagement of relevant cultural authorities in the event of a spill, have been adopted to mitigate the risk. There is potential for temporary or localised effects on cultural features and heritage values associated with affected environmental receptors; however, these impacts are not expected to result in the loss of heritage value, cultural practice, knowledge transmission, or cultural obligations at a broader cultural landscape or population scale.

Benthic habitats (coral, seagrass)

Through consultation and existing literature, Indigenous groups identified benthic habitats as valuable for their ecological values, including corals attracting fish and seagrass providing shelters for fauna, as well as an important habitat for dugongs. Additionally, coral is valued by Murujuga Aboriginal Corporation (MAC) for its aesthetic values.

As described in Section 6.8 and Section 6.9, an unplanned hydrocarbon release may impact benthic habitats. Given hydrocarbon characteristics, rapid weathering, short-term exposure, as well as the response strategies planned to be deployed, an unplanned release is not expected to result in a level of exposure to coral and seagrass that would cause an adverse impact on marine ecosystem functioning or integrity. As such, cultural values and intangible cultural heritage associated with benthic habitats are expected to be maintained.

Plankton

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Through consultation and review of available literature (Section 4.9) Woodside understands that marine fauna such as plankton are culturally important to Traditional Custodians and may be affected by routine and non-routine emissions, light emissions, and unplanned hydrocarbon releases. Traditional Custodians value these species both tangibly as well intangibly as they can be considered a resource or linked to Songlines and Dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have an obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country.

As described in Sections 6.7, 6.8, and 6.9, potential impacts to marine fauna are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts are not expected to occur to significant proportions of the populations of the species, nor expected to result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. As such, cultural values and intangible cultural heritage associated with plankton are expected to be maintained.

Fish and cephalopods

Fish and squid have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level.

Through consultation, fish were identified as important agents in the management of the broader ecosystem for Indigenous groups within or adjacent to the EMBA. There are Thalu ceremonies associated with increasing fish stocks. It may be assumed that inter-generational transmission of cultural knowledge relating to fish may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). Intangible cultural heritage associated with fish, including inter-generational knowledge regarding fishing techniques and migratory patterns, can be managed by reducing impacts to fish in nearshore marine environments to which this cultural knowledge is intrinsically connected.

The octopus is an important totem to Ngarla People and features in the creation story of Solitary Island. There are increase ceremonies/rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites in the reviewed literature were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are preformed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals.

The potential impacts from the Petroleum Activity on fish and cephalopods are not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with fish and cephalopods are expected to be maintained.

Whales, dolphins and dugongs

There are increase ceremonies/rituals for species of animals and plants important to Indigenous peoples, to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites in the reviewed literature were confined to onshore locations, though the values may extend offshore. For example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals. For example, the thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound. Reviewed literature (DBCA 2020) also includes information that is marked as information that cannot be copied, reproduced or used without consent. The values described in the literature are environmental in nature, apply to marine mammal behaviours at a population level and are managed through existing environmental controls.

Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Whale symbology expressed through stories, music, and dance can reflect a group's connections with the sea, as well as marine fauna, which then comprise a group's cultural values (Ardler 2021; Bursill et al. 2007; Cressey 1998). Whales also speak to a broader connection that exists between Indigenous people and their surrounding environment. Beyond mythology and symbolism, whales can be connected with various economic and social functions associated with everyday life. Cultural knowledge of whales, whale migration, behaviour and the related marine environment may all be important in ensuring the continuation of these socio-economic functions and other related activities that remain valuable to Indigenous people (Fijn 2021). No impacts to communities' ability to perform or transmit stories, music or dance are anticipated from the Petroleum Activity. Where timing or performance is linked to sighting or engaging with these species, impacts may occur where numbers or migration behaviours are impacted at a population level.

Indigenous groups have expressed interest about whale migratory routes and studies. Inter-generational transmission of cultural knowledge (including songlines) relating to marine mammals may be impacted where changes to population or behaviour at a population level results in reduced sightings (e.g. through population decline, changes to

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migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

The potential impacts from the Petroleum Activity on marine mammals are not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with marine mammals are expected to be maintained.

Marine reptiles (turtles)

Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level.

Through consultation and review of available literature (Section 4.9), Woodside understands that marine fauna such as turtles, are culturally important to Traditional Custodians, and may be affected by light emissions. Traditional Custodians value these species both tangibly as well intangibly as they can be considered a resource or linked to Songlines and Dreaming stories. Traditional Custodians also have connection to many marine species through kinship and totemic systems; an individual may have obligation to care for a species to which they are kin. Traditional Custodians may also have a cultural obligation to care for the environmental values of Sea Country.

Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Cultural knowledge may also be conveyed through stories, such as the turtle being trapped in the sea as a result of its greed for berries as recounted by Capewell (2020). Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Indigenous groups have expressed an interest regarding turtle monitoring programs and migration patterns.

Activities that impact turtle populations and their marine environment may have an indirect impact on some Aboriginal communities as this can limit access to cultural sites or deplete hunting areas that would threaten local food security (Delisle et al. 2018:251). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

The potential impacts from the Petroleum Activity on marine reptiles are not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with marine reptiles are expected to be maintained.

Seabirds

Seabirds have been identified through literature as a culturally significant species (Malgana Aboriginal Corporation 2021), as well as a resource (seabird eggs; Smyth 2007). Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) are likely to be impacted where there is an impact at the species/population level. Intangible cultural heritage may also include the transmission of cultural knowledge about seabirds, such as nesting areas, hunting areas and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021) Inter-generational transmission of cultural knowledge relating to seabirds may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

The potential impacts from the Petroleum Activity on seabirds are not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with seabirds are expected to be maintained.

Shoreline habitats (mangroves)

Through consultation, Indigenous peoples identified shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified as resources, and a potential nursery for turtles. Literature also notes that mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that mangrove seeds are used as a resource by Ngarda-Ngarli (the collective term for the Traditional Custodians who look after Murujuga Country).

There is no overlap between the Operational Area and mangrove habitat, and no planned impacts to mangroves from the Petroleum Activity. In the event of an unplanned hydrocarbon release mangrove habitats may be affected by shoreline accumulation. However, as described in Section 6.8.3, given the non-persistent nature of the hydrocarbons, no significant effects to mangrove habitat are expected to occur. As such, cultural values and intangible cultural heritage associated with shoreline habitats are expected to be maintained.

Conclusion

The potential impacts and risks from the Petroleum Activity are not considered to be ecologically significant at the population level. As such, impacts are not expected to result in the loss of heritage value, cultural practice, knowledge

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transmission, or cultural obligations at a broader cultural landscape or population scale. Refer to the impacts on intangible values assessment above.

No consequence has been assigned regarding indirect emissions impacts as there is no conclusive evidence of a causal link between current industrial air emission levels and potential anthropogenic change to rock art on Murujuga (as described in Section 6.7.8). Woodside will continue to monitor the outcomes of MRAMP (as per **C 10.1**), apply a precautionary approach through implementation of the controls listed in Section 6.7.8, and update or change the management of the EP accordingly.

The impact and risk assessment for cultural features and heritage values has therefore determined that the planned activities are unlikely to result in an impact greater than localised and low level (E) and unplanned activities are assessed to have a residual risk rating of moderate (or lower). Woodside will continue to consider new heritage information as it becomes available.

Demonstration of ALARP

As marine ecosystems may hold both cultural and environmental value with cultural and environmental values intrinsically linked; in addition to the specific controls for cultural features and heritage values, the controls and performance standards outlined will further reduce potential impacts to environmental related values including marine species and habitats.

Control considered	*Feasibility (F) & Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Adopted*
Apply a 'living heritage[104]' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledges across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	F: Yes CS: Minimal cost	Implementation of the 'living heritage' approach pays acknowledgement and respect to Traditional Custodian communities. It supports the transfer of cultural knowledges and is an effective strategy to manage intangible cultural values.	Benefits outweigh cost/sacrifice.	Yes **C 11.1**
Implement the Petroleum Activity in a manner that is not inconsistent with the objectives of the Murujuga National Park Management Plan 78, through execution of the Conservation Agreement and Deep Gorge Joint Statement.	F: Yes CS: Significant potential cost. Legal requirement.	Legal requirement to carry out activities not inconsistent with the Murujuga National Park Management Plan.	Control based on legislative requirements – must be adopted.	Yes **C 11.2**
Implement the Petroleum Activity in a manner that is not inconsistent with UNESCO Operational Guidelines for the Implementation of the World Heritage Convention	F: Yes. CS: Minimal cost.	Implementation of controls for compliance with World Heritage Listing ensures protection and conservation of outstanding universal values,	Benefits outweigh cost/ sacrifice.	Yes **C 11.3**
The environmental impacts and risks of the activity will	F: Yes	Implementation of activities and associated controls to	Benefits outweigh cost/sacrifice	Yes

[104] Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation and evolves in response to the environment. Woodside applies a 'living heritage' approach to its cultural heritage management. This includes ensuring that Traditional Custodians are given voice to identify interests, transmit information and express concerns. Woodside works with Traditional Custodians to support and follow appropriate cultural protocols, including calling to Country, conducting smoking ceremonies (in areas where this custom is appropriate) and undertaking cultural awareness. Woodside will collaborate and provide relevant information it holds to groups such as Heritage Management Committees where they are established.

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Demonstration of ALARP				
continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.	CS: Substantial costs	ALARP and acceptable levels supports the maintenance of cultural features and heritage values		**C 11.4**
Inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	F: Yes CS: Minimal cost	Ensures workforce is suitably aware of cultural features and heritage values in the area they are operating.	Benefits outweigh cost/sacrifice.	Yes **C 11.5**
Activities under the Petroleum Activity will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act	F: Yes CS: Costs associated with the implementation	Implementation of the control ensures any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration, are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	Yes **C 11.6**
Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment that will cause new seabed disturbance to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	F: Yes. CS: Minimal costs associated with review of data and avoidance or minimisation options.	Review of data by suitably qualified maritime archaeologist will inform potential exclusion or avoidance areas for areas where there may be new seabed disturbance. Implementing this process will protect and minimise any physical impacts to underwater cultural heritage. Additionally, this process is not inconsistent with the Guidelines on the application of the Underwater Cultural Heritage Act 2018: Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters (DCCEEW, 2024b).	Benefits outweigh cost/ sacrifice.	Yes **C 3.1**
Unexpected finds of potential Underwater Cultural Heritage sites/ features, including First Nations UCH are managed in accordance with an Unexpected Finds Procedure set out in Section 7.2.5	F: Yes. CS: Cost of implementation.	Allows management of Unexpected Finds in accordance with legislative requirements, (including Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines on the application of the *Underwater Cultural Heritage Act 2018:* Assessing and Managing Impacts to Underwater Cultural Heritage in	Benefits outweigh cost/ sacrifice.	Yes **C 3.2**

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Demonstration of ALARP				
		Australian Waters, expert advice and community expectations.		
Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the ATSIHP Act 1984.	F: Yes. CS: Minimal costs associated with reporting process.	Meets legislative requirements and community expectations.	Benefit outweighs cost/ sacrifice.	Yes **C 3.3**
Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure (Section 7.2.5).	F: Yes. CS: Minimal cost.	Ensures workforce are suitably aware of legal and process requirements for managing cultural features and heritage values.	Benefits outweigh cost/ sacrifice.	Yes **C 3.4**
The Murujuga Rock Art Strategy and Monitoring Program (MRAS/MRAMP), run by DWER and MAC, is in place to protect the Aboriginal rock art by providing a long-term framework that builds on previous work to deliver an improved approach to monitoring, analysis and management. The MRAS describes an approach for the management of impacts to the rock art that is consistent with the State Government's responsibilities under the *Environmental Protection Act 1986* (WA) Woodside will maintain membership of the Murujuga Rock Art Reference Group Woodside funding contributes to the execution of the MRAS and MRAMP Woodside monitors the outcomes of the MRAMP and assesses relevance to this activity as part of the implementation strategy of this EP.	F: Yes CS: Minimal cost	Benefits as defined in Section 6.7.8 • Program: Murujuga Rock Art (Western Australian Government) • Murujuga Rock Art Monitoring Program Further studies by DWER/Murujuga Aboriginal Corporation are required to provide scientific certainty and allay stakeholder concerns.	Benefits outweigh cost/sacrifice	Yes **C 10.1**
Onshore processing facilities (i.e. Karratha Gas Plant) are subject to regulatory assessment and compliance under the *Environmental Protection Act 1986* (WA) This includes implementation of potential EQMF developed as an	F: Yes CS: Minimal	Ensures application of precautionary principle to potential emissions risks relating to rock art. Ensures technical solutions to emissions management are considered and employed to keep potential impacts ALARP.	Benefits outweigh cost/sacrifice	Yes **C 10.2**

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Demonstration of ALARP				
outcome of MRAS; and measures such as NO_x concentration limits at emissions point sources under EP Act Part V licenses, and implementation of Part IV conditions		Ensures adaptive management to evolving scientific evidence and that downstream emissions are maintained at a level that is acceptable with regards to the management of cultural heritage values.		
Forecast, measure, monitor and or estimate facility fuel and flare emissions (in accordance with NGERS and WMS procedures named in Section 7.2.7.6.2) to inform optimisation management practices and minimise environmental impact of emissions.	F: Yes. CS: Minimal cost. Standard practice.	Minimises environmental impact of emissions through planning, ongoing review, governance and optimisation. It combines with good operating practice to maximise production and reduce flaring emissions and fuel emissions at KGP to manage cost, which improves energy intensity (e.g. cleaner production), optimising emissions from the activity. Fuel and flared gas are potential product streams, as such, Woodside applies routine short- and long-term optimisation and opportunity management framework to identify and prioritise enhancement opportunities. Annual flare and fuel target setting and monthly review of performance is completed for GWA.	Control is WMS requirement – must be adopted.	Yes. **C 10.3**
Use of cultural heritage monitors on vessels to oversee implementation of controls protecting cultural values	F: No, vessels are POB constrained with no ability to facilitate additional personnel CS: Not feasible	Not considered – control not feasible.	Not considered – control not feasible.	No
Should it be identified that relevant cultural authorities may be affected in the unlikely event of a spill, Woodside will engage with those parties as appropriate and in alignment with the FSP.	F: Yes CS: Minimal	Engaging with relevant cultural authorities that may be impacted by a spill will allow the Traditional Custodians to identify areas of concern.	Benefits outweigh cost/sacrifice	Yes Adopted
ALARP Statement: On the basis of the impact and risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A), Woodside considers the adopted controls appropriate to manage the potential impacts and risks to cultural features and heritage values. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

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Demonstration of acceptability
Acceptability statement: The impact and risk assessment has determined that, given the adopted controls, planned activities are unlikely to result in an impact greater than temporary localised impact not significant to areas or items of cultural significance with no lasting effects (F)[105] and unplanned activities are assessed to have a residual risk rating of moderate (or lower). The Petroleum Activity and the EMBA are not expected to have a significant impact (e.g. changes in population levels) on MNES including marine fauna with a cultural connection with, or traditional use in nearshore areas. While the activity will occur on the Ancient Landscape, Woodside facilitates a process of undertaking desktop assessments by qualified professionals, using remote sensing techniques, to identify known or potential underwater cultural heritage where new seabed disturbance occurs and an unexpected finds procedure (refer to Section 7.2.5) will be implemented. Therefore, the activity is not inconsistent with Underwater Cultural Heritage Guidance for Offshore Developments and the Guidelines to assessing and managing impacts to Underwater Cultural Heritage in Australian waters under the UCH Act. Woodside recognises and supports the ongoing management of heritage values under listings Murujuga Cultural Landscape World Heritage Listing, Murujuga National Park and Dampier Archipelago (Including Burrup Peninsula) National Heritage Place. Legislation and other requirements considered relevant for managing theoretical impacts from indirect emissions associated with onshore processing to the Murujuga Cultural Landscape and how the Petroleum Activity is not inconsistent with the protection, conservation, presentation or transmission to future generations of the World Heritage values of the Murujuga Cultural Landscape World Heritage Property is described in the Demonstration of Acceptability in Section 6.7.8. As outlined in Section 6.11 and based on the EPOs considered below and the relevant adopted controls, planned activities proposed under the Petroleum Activity are not inconsistent with relevant heritage legislation, management plans and agreements under which these values are protected and conserved. In addition, Woodside has engaged with Traditional Custodians adjacent to the EMBA to understand the cultural features and heritage values that may occur and potential impacts from the activity. Woodside maintains a long-standing relationship, where established, with relevant Traditional Custodian groups, and undertakes consultation with those whose functions, interests or activities may be affected by activities conducted under this EP. In the event of an unplanned environmental impact, such as a hydrocarbon spill, Woodside will engage with relevant Indigenous groups within or adjacent to the EMBA in line with its First Strike Plan (Appendix H). Woodside will support Traditional Custodians to practice cultural obligations to care for Country by providing timely information on the incident, facilitating safe access to Sea Country where practicable, and incorporating Traditional Custodian knowledge and priorities into response, mitigation and recovery activities. For ongoing consultation post Regulation 25 consultation, Woodside supports ongoing engagement with Traditional Custodians. Woodside is committed to ongoing engagement and support to care for and manage Country, including Sea Country. The 'living heritage' management approach has been developed to enable Woodside to manage cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians. Further opportunities to reduce the impacts have been investigated above. The potential impacts and risks are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks to cultural features and heritage values to a level that is acceptable, if ALARP.

[105] *Noting that as the receptor sensitivity is high the impact significance level is Slight (E).*

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EPOs, EPS and MC related to Cultural Features and Heritage Values[106]			
EPO	***Controls***	***EPS***	***MC***
EPO 11a No adverse impacts[107] to cultural features and heritage values from the Petroleum Activity **EPO 11b** Woodside supports ongoing engagement and consultation with Traditional Custodians or the purpose of assessing and avoiding impacts to cultural features and heritage values.	**C 11.1** Apply a 'living heritage' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	**PS 11.1.1** Refer to Section 6.7.8	**MC 11.1.1** Refer to Section 6.7.8
		PS 11.1.2 Woodside will assess and where deemed practicable implement appropriate cultural protocols where requested by Traditional Custodians.	**MC 11.1.2** Records demonstrate Woodside implemented cultural protocols as requested.
	C 11.2 Implement the Petroleum Activity in a manner that is not inconsistent with the objectives of the Murujuga National Park Management Plan 78, through execution of the Conservation Agreement and Deep Gorge Joint Statement.	**PS 11.2.1** Refer to Section 6.7.8	**MC 11.2.1** Refer to Section 6.7.8
		PS 11.2.2 Refer to Section 6.7.8	**MC 11.2.2** Refer to Section 6.7.8
	C 11.3 Implement the Petroleum Activity in a manner that is not inconsistent with UNESCO Operational Guidelines for the Implementation of the Word Heritage Convention.	**PS 11.3** Refer to Section 6.7.8	**MC 11.3.1** Refer to Section 6.7.8
	C 11.4 The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.	**PS 11.4** Consideration of cultural values/new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options	**MC 11.4.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified (Section 7.2.8)

[106] As marine ecosystems may hold both cultural and environmental value (see Section 4.9.1), with cultural and environmental values intrinsically linked, in addition to the specific controls for cultural features and heritage values, the controls and performance standards in Sections 6.7 and 6.9 will reduce impacts to cultural features and heritage values including marine species and habitats.

[107] For the purposes of the Petroleum Activity, an adverse impact to cultural features or heritage values is considered to occur where there is: direct physical disturbance causing observable damage to a site or object of cultural significance; a measurable and significant decline in the population or habitat of a culturally significant species attributable to the activity; or a substantiated impact on recognised intangible cultural values.

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EPOs, EPS and MC related to Cultural Features and Heritage Values[106]			
EPO	***Controls***	***EPS***	***MC***
		analysis/ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.	
	C 11.5 Inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	**PS 11.5** All relevant marine crew have completed inductions that include information on cultural values, including tangible and intangible cultural heritage for awareness	**MC 11.5.1** Records demonstrate all relevant marine crew have completed inductions that include cultural material
	C 11.6 Activities under the Petroleum Activity will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act.	**PS 11.6** Where an object or Significant Aboriginal Area is protected by a declaration under Section 12 or Sections 9/10 respectively of the ATSIHP Act, no work inconsistent with that declaration will be conducted for the duration of that declaration.	**MC 11.6.1** No non-compliances with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act.
EPO 3 No adverse impact[108] to unexpected finds of Underwater Cultural Heritage[109] without a permit[110].	**C 3.1** Review of existing survey data by a suitably qualified maritime archaeologist to inform areas for laydown and/or installation of equipment to avoid or where not possible, minimise physical impacts to cultural heritage areas or prospective areas.	**PS 3.1** Refer to Section 6.7.2	**MC 3.1.1** Refer to Section 6.7.2
	C 3.2 Unexpected finds of potential Underwater Cultural Heritage sites/features, including First Nations UCH are managed in accordance with the Unexpected	**PS 3.2** Refer to Section 6.7.2	**MC 3.2.1** Refer to Section 6.7.2

[108] Adverse impacts to UCH without a permit are defined under the Underwater Cultural Heritage Act 201, subsection 30(2).

[109] Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act

[110]Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

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EPOs, EPS and MC related to Cultural Features and Heritage Values[106]			
EPO	***Controls***	***EPS***	***MC***
	Finds Procedure set out in Section 7.2.5.		
	C 3.3 Report any potential underwater cultural heritage finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the ATSIHP Act 1984.	**PS 3.3** Refer to Section 6.7.2	**MC 3.3.1** Refer to Section 6.7.2
	C 3.4 Relevant vessel crew will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure	**PS 3.4** Refer to Section 6.7.2	**MC 3.4.1** Refer to Section 6.7.2
EPO 10 Prevent accelerated weathering of Murujuga rock art or impact to human health from air emissions that result from onshore processing of GWA gas.	**C 10.1** The Murujuga Rock Art Strategy and Monitoring Program (MRAS/MRAMP), run by DWER and MAC, is in place to protect the Aboriginal rock art by providing a long-term framework that builds on previous work to deliver an improved approach to monitoring, analysis and management. Woodside will maintain its support of the MRAS/MRAMP, monitor the outcomes and assesses relevance to this activity as part of the implementation strategy of this EP.	**PS 10.1** Refer to Section 6.7.8	**MC 10.1.1** Refer to Section 6.7.8 **MC 10.1.2** Refer to Section 6.7.8
	C 10.2 Karratha Gas Plant is subject to assessment and compliance under the Environmental Protection Act 1986 (WA), including: • Existence of applicable Ministerial Statement(s) • Implementation of potential EQMF if	**PS 10.2.1** Refer to Section 6.7.8 **PS 10.2.2** Refer to Section 6.7.8	**MC 10.2.1** Refer to Section 6.7.8 **MC 10.2.2** Refer to Section 6.7.8

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EPOs, EPS and MC related to Cultural Features and Heritage Values[106]			
EPO	***Controls***	***EPS***	***MC***
	developed as an outcome of MRAS • NO_x concentration limits at emission point sources (via. EP Act Part V Licencing) • Implementation of Part IV conditions. • Requirement to assess and implement NO_x reduction measures, (e.g. NWS AQMP MA4) This includes implementation of potential EQMF developed as an outcome of MRAS; and measures such as NO_x concentration limits at emissions point sources under EP Act Part V licences, and implementation of Part IV conditions. The NWS AQMP also requires MA5 development of an adaptive management plan to address the potential impact to rock art from industrial emissions.		
	C 10.3 Forecast, measure, monitor and or estimate facility fuel and flare emissions (in accordance with NGERS and WMS procedures named in Section 7.2.7.6.2) to inform optimisation management practices and minimise environmental impact of emissions.	**PS 10.3.1** Refer to Section 6.7.8	**MC 10.3.1** Refer to Section 6.7.8
		PS 10.3.2 Refer to Section 6.7.8	**MC 10.3.2** Refer to Section 6.7.8

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7. IMPLEMENTATION STRATEGY

7.1 Overview

Regulation 22 of the Environment Regulations requires an EP to include an implementation strategy. The implementation strategy for the Petroleum Activity demonstrates that fit-for-purpose systems, practices and procedures are in place to direct, manage and review the activity so that environmental impacts and risks are reduced to ALARP and are acceptable, and that the EPOs and EPSs defined in this EP are achieved.

Woodside, as operator, is responsible for implementing this strategy and ensuring that the Petroleum Activity is conducted in accordance with this EP and the WMS (Section 1.7).

7.2 Systems, practices, and procedures

All operational activities are planned and executed in accordance with applicable legislation, codes and standards, the management measures identified in this EP and Woodside's environment standards and procedures implemented through the WMS.

The systems, practices and procedures to be implemented are reflected in the EPSs in Section 6. Document titles and reference numbers may change during the life of this EP and are managed through Woodside's change management process (Section 7.2.8).

7.2.1 Woodside Management System operate processes

Under the WMS Operate Activity (see Section 1.7 for an overview of the WMS), there are four overarching processes; those directly relevant to the implementation of this EP and environmental management during the Petroleum Activity are described below (Operate Plant Process and the Maintain Assets Process).

7.2.1.1 Operate plant

The objective of the Operate Plant Process is to ensure production is carried out in a safe, efficient, reliable and economic manner, and that all required process variables are within allowable limits. This ensures the potential for unplanned (accident/incident) events that may impact the environment are minimised.

The Operate Plant Process develops key activities to support ongoing production activities to ensure the facility is operated within the Basis of Design. The process also identifies required production routines, routine execution, recording data gathered and formulating remedial activities. The Operate Plant Process includes the Integrated Safe System of Work (ISSoW) system (described below).

In addition, the Operating Practice Management System Performance Standard (MSPS) (M02) is in place to assure operating practices are in place, such that:

- integrity critical operating procedures are available, accurate, up-to-date, understood and used
- safe operating and technical integrity limits are defined, understood and the process is managed within these limits.

7.2.1.1.1 Integrated safe system of work

The ISSoW Procedure outlines the key activities required to achieve effective management of permit-controlled work on the facility. The ISSoW process is a management system for all work and is a key element in ensuring personnel safety, protecting the environment, and protecting the technical integrity of the facility.

Work within the 500 m PSZ and in the vicinity of connected subsea infrastructure is managed in accordance with ISSoW.

The ISSoW system takes a risk-based approach to activities, thus tasks with higher levels of risk are subjected to greater scrutiny and control. The ISSoW system also allows for low risk routine tasks to be carried out with adequate but minimal administration. The prime objective of ISSoW is to ensure work other than normal operations is properly planned, risk assessed, controlled, coordinated, and safely executed. It provides a methodical approach to identifying hazards, assessing risks, and creating and supporting permits to work and associated certificates.

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In keeping with ALARP principles, this system is critical to ensuring the appropriate level of hazard identification and risk assessment is carried out for activities performed on the facility.

In addition, the Safe Work Control MSPS (M04) is in place to assure effective safe work control, permit to work and task risk management arrangements are implemented and followed to control the risks arising from work activities.

7.2.1.2 Maintain assets

The Maintain Assets Process aims to improve the reliability and availability of plant and equipment (which includes that required for safe operation) through well managed and planned execution of maintenance that promotes a proactive maintenance culture.

Maintenance, inspection and testing systems and procedures are in place to safeguard the integrity of the facility. The maintenance strategy for the facility is based on optimising safety, minimising environmental impact and maximising production. Maintenance practices used to establish well managed maintenances strategies, planned execution and improvement are described in the Maintenance of Assets Procedure.

A risk-based approach is used as the basis for establishing and prioritising inspection, maintenance and testing requirements at the facility. Equipment is assessed to establish equipment criticality with respect to the consequences and likelihood of equipment failure. This informs determination of appropriate maintenance and inspection activities. Maintenance activities are allocated risk rankings according to the criticality of equipment, to ensure high risk maintenance work orders are completed as a priority.

A computerised maintenance management system (CMMS) provides a database called SAP-PM that contains facility registers, equipment details, spare parts data and associated planned maintenance tasks. This system is used to plan, monitor and record maintenance activities. The system provides various reports that enable monitoring and assessment of maintenance activities.

SCE Technical Performance Standards identify SCEs and associated assurance activities. These activities are identified in the CMMS and given the appropriate priority (Technical Integrity status). Refer to Sections 2.5.5 and 7.2.9 for more detail on SCE Technical Performance Standards and how they differ from EPSs required by the Environment Regulations. SCE Technical Performance Standards form a key component in the processes and systems implemented by Woodside to maintain safety and environment critical plant and equipment.

In addition, the Maintenance and Inspection MSPS (M03) is in place to assure that the necessary inspection and maintenance requirements are identified and carried out to maintain the integrity of SCEs.

7.2.2 Process safety management

To ensure the safety, security and health of its employees, contractors, and the protection of the environment and assets, Woodside has adopted the Energy Institute's Process Safety Management (PSM) framework within its PSM Procedure which sets out a disciplined framework for managing the integrity of systems and processes that handle hazardous substances over the production (and exploration) lifecycle. It deals with the prevention and control of events that have potential to release hazardous materials and energy.

PSM comprises 4 main focus areas, each of which contains several PSM requirements that define key aspects required to ensure that PSM is integrated through the organisation. There are 20 PSM requirements. The focus areas and requirements are shown in Figure 7-1.

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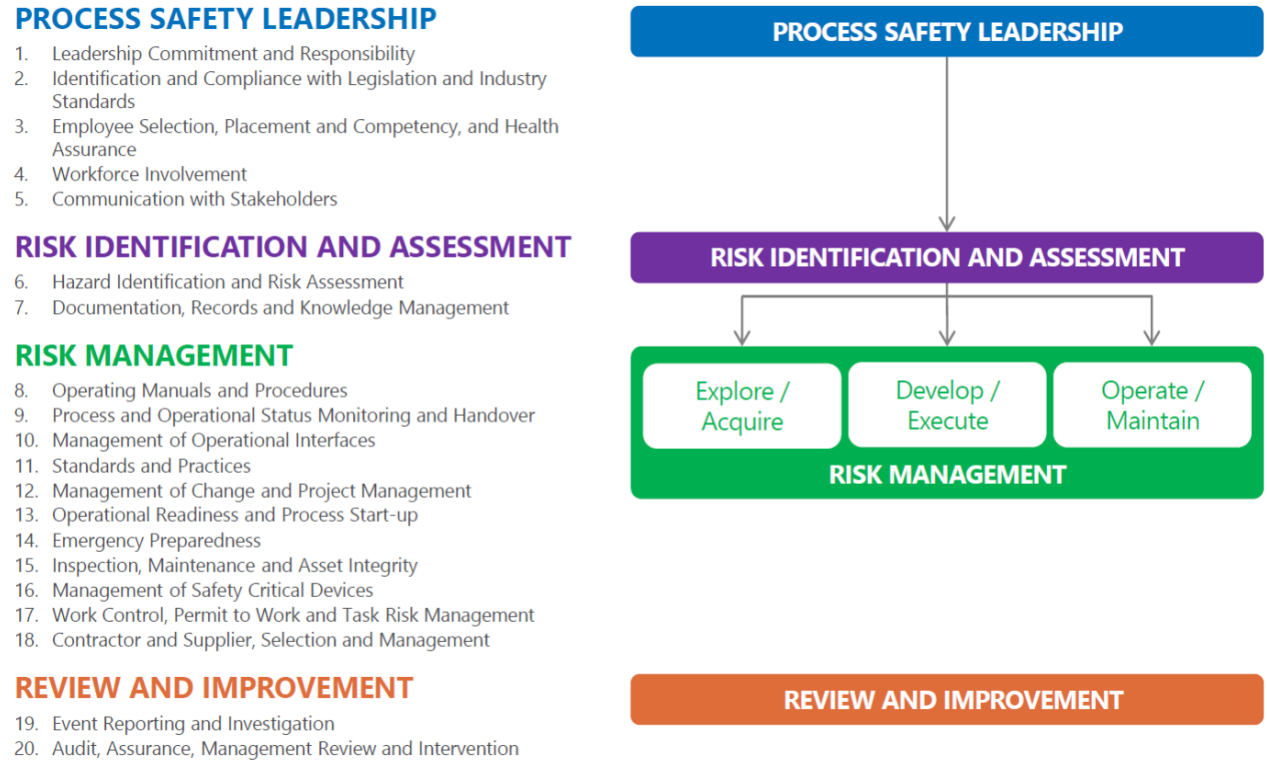


Figure 7-1: Process safety management focus areas and requirements

7.2.2.1 Woodside safety culture framework

Woodside's 'Our Safety Culture' framework (shown in Figure 7-2) promotes a strong HSE culture and is a key enabler for effective process safety management. This framework outlines the expected behaviours for everyone including supervisors and managers/executives, and is openly discussed as part of inductions, training and development.

Theme	Everyone	Supervisors	Managers/Executives
Standards	Follow rules	Ensure compliance	Set high standards
Communication	Speak up	Encourage the team	Communicate openly
Risk management	Be mindful	Promote risk awareness	Confront risk
Involvement	Get involved	Involve the team	Involve the workforce

Figure 7-2: Woodside 'Our Safety Culture' framework

7.2.3 Selection, assessment and approval of chemicals

Operational chemicals required for the Petroleum Activity are selected, assessed and approved in accordance with the Chemical Selection and Assessment Environment Guideline. This procedure is used to demonstrate that the potential impacts of the chemicals selected are acceptable and ALARP, in line with the

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Woodside Environmental Management Standard. Chemicals are required to be selected with the lowest practicable environmental impacts and risks, subject to technical constraints, and managed to achieve outcomes that are ALARP and acceptable.

Chemical selection and environmental assessment of discharged and operational chemicals is undertaken in accordance with the Chemical Selection and Assessment Environment Guideline. This process applies a risk-based framework to assess environmental hazards, including ecotoxicity, biodegradation and bioaccumulation, and to confirm that chemicals with the lowest practicable environmental risk are selected.

Chemicals proposed to be selected as part for the Petroleum Activity will be managed in accordance with the requirements set out by the Australian Government under the Industrial Chemicals Environmental Standard (IChEMS). The IChEMS is a key component of several national reforms to improve approaches to how industrial chemicals are used, produced, imported and managed. Industrial chemicals will be listed on the IChEMS Register in one of 7 schedules according to their environmental risk.

Chemicals proposed for selection will be assessed against those listed in the IChEMS register under one of the seven schedules according to their environmental risk. The selection and management of any chemical will adhere to the specific risk management measures, storage, use and handling requirements outlined in the corresponding schedule.

7.2.3.1 Selection criteria

The chemical assessment process follows the principles outlined in the Offshore Chemical Notification Scheme (OCNS), which manages chemical use and discharge in the United Kingdom (UK) and the Netherlands and applies the requirements of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention). OCNS is widely accepted as good industry practice for offshore chemical assessment.

All chemical substances on the OCNS ranked list of registered products have an assigned ranking based on toxicity and other relevant parameters, such as biodegradation and bioaccumulation, in accordance with one of two schemes (as shown in Figure 7-3):

- **Hazard Quotient (HQ) Colour Band**: Gold, Silver, White, Blue, Orange or Purple (listed in order of increasing environmental hazard).
- **OCNS Grouping**: E, D, C, B or A (listed in order of increasing environmental hazard). Used for inorganic substances, hydraulic fluids and pipeline chemicals only.

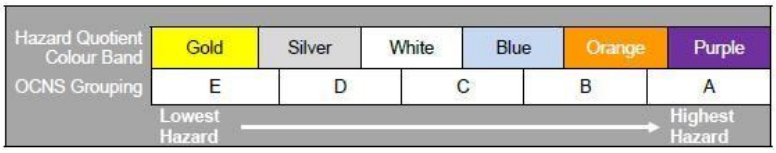


Figure 7-3: OCNS ranking scheme

Where operational chemicals with an OCNS rating of Gold/Silver/E/D and no OCNS substitution or product warning are selected, or a substance is considered to pose little or no risk to the environment (PLONOR), no further control is required. Such chemicals do not represent a significant impact on the environment under standard use scenarios and therefore, are considered ALARP and acceptable.

If other OCNS rated or non-OCNS rated operational chemicals are selected, the chemical is assessed as follows:

- If there is **no planned discharge** of the operational chemical to the marine environment, written technical verification of the 'no discharge' fate is provided and no further assessment is required.
- If there is **planned discharge** of the operational chemical to the marine environment, a further assessment/ALARP justification is conducted.

The ALARP assessment includes consideration of chemical toxicity, biodegradation and bioaccumulation potential, using industry standard classification criteria (CEFAS scheme criteria).

If a product has no specific ecotoxicity, biodegradation or bioaccumulation data available the following options are considered:

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- Environmental data for analogous products can be referred to where chemical ingredients and composition are largely identical; or
- Environmental data may be referenced for each separate chemical ingredient (if known) within the product.

If no environmental data is available for a chemical or if the environmental data does not meet the acceptability criteria outlined above, potential alternatives for the chemical are investigated, with preference for options with an HQ band of Gold or Silver or are OCNS Group E or D with no substitution or product warnings.

If no more environmentally suitable alternatives are available, further risk reduction measures (e.g. controls related to use and discharge) are considered for the specific context and implemented where relevant to ensure the risk is ALARP and acceptable.

Once the further assessment/ALARP justification has been completed, concurrence from the relevant manager that the environmental risk as result of chemical use is ALARP and acceptable is obtained.

7.2.4 Invasive marine species risk assessment

7.2.4.1 Objective and scope

To minimise the risk of introducing invasive marine species (IMS) as a result of the Petroleum Activity, all applicable vessels and immersible equipment will be subject to Woodside's IMS risk assessment process (unless exempt as outlined below in accordance with Woodside's Invasive Marine Species Management Plan).

The objective of the risk assessment process is to identify the level of threat a contracted vessel, or immersible equipment poses if no additional risk reduction management measures are implemented. This allows Woodside (and its contractors) to apply management options that are commensurate to the identified level of risk.

The IMS risk assessment process does not apply to:

- vessels or immersible equipment that do not plan to enter the IMS Management Area (IMSMA)[111]
- 'new build' vessels or immersible equipment launched less than14 days before mobilisation
- locally sourced vessels or immersible equipment from within the Western Locally Sourced Zone (W-LSZ)[112]. Vessels, or immersible equipment are defined as locally sourced when the same supply facilities/port have been used since their last IMS inspection, full hull clean in dry dock or application of antifouling coating (AFC).

7.2.4.2 Risk assessment process

Woodside's IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships' biofouling to minimise the transfer of invasive aquatic species International Maritime Organisation, 2023).

To effectively evaluate the potential for vessels and immersible equipment to introduce IMS, a risk assessment process has been developed to score and evaluate the risk posed by each support vessel, or immersible equipment planning to undertake activities within an IMSMA or Operational Area. The risk assessment process considers a range of factors, as listed in Table 7-1 and Table 7-2.

[111] The IMSMA is defined as all nearshore waters around Australia, extending from the lowest astronomical tide mark to 12 nm from land ('Territorial Seas', and including Australian territorial islands). The IMSMA also includes: (i) all waters which are shallower than the 50-metre depth contour outside of the 12 nm boundary, thereby encompassing submerged reefs and atolls, and (ii) Operational Areas defined in environmental approvals. The IMSMA is based on current maritime boundary definitions, legal frameworks and requirements, IMS risk interpretations and existing management arrangements applied by Commonwealth and State/Territory regulatory agencies.

[112] The Western Locally Sourced Zone (W-LSZ) spans an area that includes the entire Western Australian coastline out to the Exclusive Economic Zone (EEZ) limit at 200 nm, but it excludes any government-declared Quarantine Areas.

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The IMS risk assessments will be undertaken by a trained environment adviser who has completed relevant Woodside IMS training or by a qualified and experienced IMS inspector. A QA/QC process is implemented for all Woodside conducted IMS risk assessments where a secondary trained environment adviser verifies the assessment to minimise the risk of misapplication and errors within the risk assessment process.

Table 7-1: Key factors considered as a part of the risk assessment process for vessels

Factors	Details
Vessel type	The risk of IMS infection varies depending on the type of vessel undertaking the activity. A higher risk rating is applied for more complex, slow-moving vessels (e.g. dredges) in comparison to simple vessels (e.g. crew transfer vessel).
Recent IMS inspection and cleaning history, including for internal niches	In the case of biofouling on external hull niches, different risk ratings are applied depending on whether out-of-water or in-water IMS inspections by qualified IMS inspectors and cleaning (if required) have been undertaken prior to contract commencement. If an IMS inspection (and clean if required) has not been undertaken in the past 6 months (from the time of contract commencement), the highest risk factor is applied. The risk factor then lessens for vessels as the time between inspection and mobilisation reduces.
Out-of-water period before mobilisation	A risk reduction factor can be applied for vessels that are hauled out and then mobilised as deck cargo or by road during mobilisation, therefore becoming air dried over an extended period. Risk reduction factor increases with exposure time out of water.
Age and suitability of AFC at mobilisation date	AFC manufacturers provide a range of coatings, each designed to avoid premature coating failure if it is correctly applied and matched to the vessel's normal speeds and activity profile (i.e. proportion of time spent stationary or below 3 knots), and its main operational region (i.e. tropical, subtropical temperate). If the AFC type is deemed to be unknown, unsuited or absent, the highest risk value is applied. If the AFC type is suitable the risk factor applied reduces with age since application.
Internal treatment systems	A risk reduction factor applied if the vessel has an internal biological fouling control system in place at the time of assessment, or evidence of manual dosing.
Vessel origin and proposed area of operation	Differing risk ratings are assigned in relation to the climatic relationship between the vessel's origin and the proposed climatic region of the proposed area of operation. Highest risk rating is applied to similar climatic regions.
Number of stationary/slow speed periods >7 days	A risk factor is calculated based on the number of 7-day periods that the vessel has operated at stationary or at low speed (<3 knots) in port or coastal waters which is any waters <50 m deep outside 12 nm from land or any waters within 12 nm of land. The greater the number of periods, the higher the risk factor applied.
Region of stationary or slow periods	A further multiplier is applied depending on the location of the stationary/slow speed periods. The highest risk rating applied if the stationary or slow speed periods occurred within ports or coastal waters of the same climatic region.
Type of activity – contact with seafloor	The potential for the introduction of IMS varies on the planned vessel activity taking place. Those activities that come in contact with sediments and thus have the potential to accumulate and harbour IMS in areas such as hoppers (dredges) and spud cans (drilling rigs) are considered to have a greater risk of infection.

Table 7-2: Key factors considered as a part of the risk assessment process for immersible equipment

Factors	Details
Region of deployment since last thorough clean, particularly coastal locations	Climatic region of use since last overhaul, thorough cleaning or prolonged period out of water (>28 days). Highest risk rating is applied to similar climatic regions. Activities occurring in nearshore areas (<50 m deep and/or within 12 nm from land) are given the highest risk rating.
Duration of deployments	Maximum duration of deployment (maximum time in water) since last overhaul or thorough cleaning. The longer the immersion period, the higher the risk rating applied.
Duration of time out of water since last deployment	A further risk reduction factor can be applied for immersible equipment that has been out of the water for an extended period.

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Factors	Details
Transport conditions during mobilisation	If the equipment is stored in damp conditions then a high risk factor is applied, while if equipment is stored in dry and well ventilated (low humidity) conditions then a low risk factor is applied.
Post-retrieval maintenance regime	A risk reduction factor is applied if the equipment/item of interest is routinely washed, cleaned, checked and/or dissembled between activities , while a higher risk rating is applied where no routine cleaning occurs.
Region of deployment since last thorough clean, particularly coastal locations	Climatic region of use since last overhaul, thorough cleaning or prolonged period out of water (>28 days). Highest risk rating is applied to similar climatic regions. Activities occurring in nearshore areas (<50 m deep and/or within 12 nm from land) are given the highest risk rating.
Duration of deployments	Maximum duration of deployment (maximum time in water) since last overhaul or thorough cleaning. The longer the immersion period, the higher the risk rating applied.

Following implementation of the risk assessment process, vessels and/or immersible equipment are classified as one of three risk categories:

- ‘Low’ – Low risk of introducing IMS of concern and hence no additional management required, or management options have been applied to reduce the risk.
- ‘Uncertain’ – Risk of introducing IMS is not apparent and as such the precautionary approach is adopted, and additional management options may be required.
- ‘High’ – High risk of introducing IMS means additional management options are required before this vessel mobilises to the Operational Area.

Following the allocation of a ‘low’ risk rating for a vessel or immersible equipment, the information provided by the vessel operator for the purposes of risk assessment must be confirmed before mobilisation. For vessels or equipment classified as posing an ‘uncertain’ or ‘high’ theoretical risk, a range of management options are presented to reduce this theoretical risk to acceptable levels and achieve a low risk status. These management options have been developed with the intention of reducing IMS risk to levels that are ALARP. It is a flexible approach that allows for a range of management actions to be tailored for a specific vessel movement. These will be assessed on a case-by-case basis and may include:

- having a suitably qualified and experienced IMS inspector inspect (desktop, in-water or dry dock) to verify risk status; where practicable, the inspection shall occur within seven days (but not more than 14 days) before final departure to the Operational Area
- applying in-water or dry dock cleaning of the hull and other niche areas, typically applied where the risk assessment outcome is High risk driven by the age of the AFC on the vessel and its time spent in similar climatic region ports
- limiting the duration that the vessel spends within the IMSMA to a maximum of 48 hours (cumulative entries); applicable for Uncertain risk vessels only
- rejecting the vessel.
- In some circumstances, such as emergency scenarios or in the presence of serious logistic constraints or other factors outside of the control of WEL, it may not be possible to effectively apply any of the IMS management measures available and described above. In the absence of regulatory conditions, commitments, or other legislative obligations that prescribe management measures for IMS, a risk assessed alternative process is available which must be approved by the relevant Business Vice President (VP), and HSE Vice President.

Where planned Woodside activities include interactions[113] between a vessel and a Woodside offshore facility that will exceed 14 consecutive days[114] the IMS translocation potential is required to be examined in

[113] *I Interaction is defined where the vessel, rig or relevant immersible equipment are at a distance of <500 m from the offshore facility..*

[114] *This is defined as when a vessel is within 500 m of the asset for a consecutive period of more than 14 days.*

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additional detail. This would likely include additional engagement with a qualified and experienced IMS Inspector, to determine whether any additional management controls should be applied to manage the risk of IMS to Low[103].

Risk factors that may be further evaluated may include the age of the vessel's antifouling coating, last IMS inspection date, and vessel transit history. Management measures that may be implemented where potential risks have been identified include, but are not limited to, minimising operational time adjacent to the offshore facility, a more specific evaluation of the potential for IMS to be present on the vessel's hull, or an inspection by a qualified IMS Inspector.

Before they enter the Operational Area, support vessels and immersible equipment are required to be a low risk of introducing IMS.

7.2.5 Unexpected finds procedure

In the event of the discovery of what appears to be Underwater Cultural Heritage (defined as 'any trace of human existence that has a cultural, historical or archaeological character and is located under water'); the following Unexpected Finds Procedure will apply:

- All activities with the potential to impact the suspected Underwater Cultural Heritage must cease immediately. Retain all records of the potential Underwater Cultural Heritage, including any imagery, description and location.
- Person who discovers the heritage object must inform the Activity Supervisor.
- Activity Supervisor must notify Woodside's Principal Heritage Adviser.
- Woodside will specify an appropriate buffer around the potential Underwater Cultural Heritage, taking into consideration the nature and scale of the potential Underwater Cultural Heritage and the activities to be managed.
- No seabed disturbance may occur within the buffer area around the potential Underwater Cultural Heritage until approved by Woodside's Principal Heritage Adviser.
- Woodside's Principal Heritage Adviser must notify a qualified underwater archaeologist and provide all available documentation of the potential Underwater Cultural Heritage.
- If the potential Underwater Cultural Heritage appears to be Aboriginal underwater cultural heritage, Woodside's Principal Heritage Adviser must notify the appropriate Traditional Custodians to determine whether it is a heritage site and if so, how the site should be managed.
- If the potential Underwater Cultural Heritage appears to be a shipwreck or aircraft that has been wrecked for more than 75 years, or is otherwise reportable under Section 40 of the *Underwater Cultural Heritage Act 2018* (Cth) (UCH Act), Woodside's Principal Heritage Advisor must notify the Minister responsible for the UCH Act, the Department of Climate Change, Energy, Environment and Water (DCCEEW) underwater archaeology section through the Australasian Underwater Cultural Heritage Database, and the Western Australian Museum.
- If the suspected heritage object includes human remains, Woodside's Principal Heritage Adviser must also notify:
  - the Australian Federal Police (phone: 131 444) of the location of the remains, that the remains are likely to be historic or Aboriginal in origin, and that it may be appropriate that Traditional Custodians and a maritime archaeologist are present during any handling of the remains
  - the Office of the Federal Environment Minister in accordance with Section 20 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth).
- Work must not recommence in the vicinity of the potential heritage object until Woodside's Principal Heritage Adviser provides written approval. Woodside's Principal Heritage Adviser must only provide written approval once agreed management measures are implemented consistent with approvals and legislation or where the potential Underwater Cultural Heritage is confirmed to not be Underwater Cultural Heritage.

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7.2.6 Offshore marine discharge adaptive management plan

7.2.6.1 Overview

The Offshore Marine Discharges Adaptive Management Plan (OMDAMP) has been developed to manage routine discharges to the marine environment from applicable offshore production facilities.

The objectives of the OMDAMP are to:

- Manage marine discharges in a way that reduces the environmental risks and potential environmental impacts to ALARP and to an acceptable level.
- Define monitoring measures to determine whether routine marine discharges comply with regulatory requirements and the Woodside Environmental Management Standard.
- Detail verification assessment and non-routine monitoring to be undertaken when routine monitoring identifies a change in discharge characteristics which have the potential to alter existing compliance with the Woodside Environmental Management Standard or relevant facility Operations Environment Plans (EPs).

The OMDAMP defines a process and rationale for management of routine marine discharges such as produced water (PW), cooling water, and brine. The OMDAMP considers applicable technical guidance (including the Commonwealth ANZG for fresh and marine water quality, National Water Quality Management Strategy and Technical Guidance: Protecting the quality of Western Australia's marine environment (EPA 2016) as well as relevant internal procedures and asset specific EP commitments. In addition, the OMDAMP is based on Woodside's experience managing PW at multiple North West Shelf offshore facilities and considers monitoring data collected over 20-30 years allowing the application of appropriate controls and any lessons learnt to ensure impacts are acceptable and reduced to ALARP.

7.2.6.2 Routine monitoring and management

Monitoring changes in water quality as well as investigating potential toxicity via whole effluent toxicity (WET) testing and implementing management to maintain acceptable levels of changes is standard industry practice in Commonwealth and State waters. By limiting the changes to water quality and therefore pathway to impact sediment quality and biota there is high confidence no environmental impact has occurred outside the approved mixing zone boundary.

The OMDAMP details trigger values, routine monitoring assessment against trigger values, analytical methods and actions when a trigger value is exceeded. The trigger values are applied through a risk-based approach that is intended to capture uncertainty around the level of impact by staging monitoring and management responses according to the degree of risk of environmental impact. This approach provides a level of confidence that management responses are not triggered too early (i.e. when there is no actual impact) or too late after significant or irreversible damage to the surrounding ecosystem (EPA 2016). Changes in discharge contaminants and PW toxicity can be detected early and can indicate the potential for an impact prior to an impact occurring allowing for timely management. WET testing confirms if there is a potential for impact.

PW samples should be representative of normal operations, hence timing of sampling coincides with a period of normal operating circumstances for a facility, as well as also considering when wells have begun to cut water, which formation water producing wells are online and chemicals that may be present in the discharge stream. Ensuring samples are representative of normal operations may require deferring sampling within the calendar year if required. Samples are analysed by a NATA accredited laboratory (where applicable) for key physio-chemical parameters and chemical analytes.

WET tests are undertaken on a broad range of taxa of ecological relevance for which accepted standard test protocols are well established. WET tests mainly focus on the early life stages of test organisms, when organisms are typically most sensitive to contaminants; the tests are designed to represent local trophic level receptors. For WET testing, a range of tropical and temperate Australian marine species were selected based on their ecological relevance, known sensitivity to contaminants, availability of robust test protocols, and known reproducibility and sensitivity as test species. The dilutions required to protect 99% and 95% of species are calculated using the Warne et al. (2018) methodology. If a trigger value is not met, it indicates uncertainty around whether the environmental value is being protected and further investigation is required (Figure 7-4).

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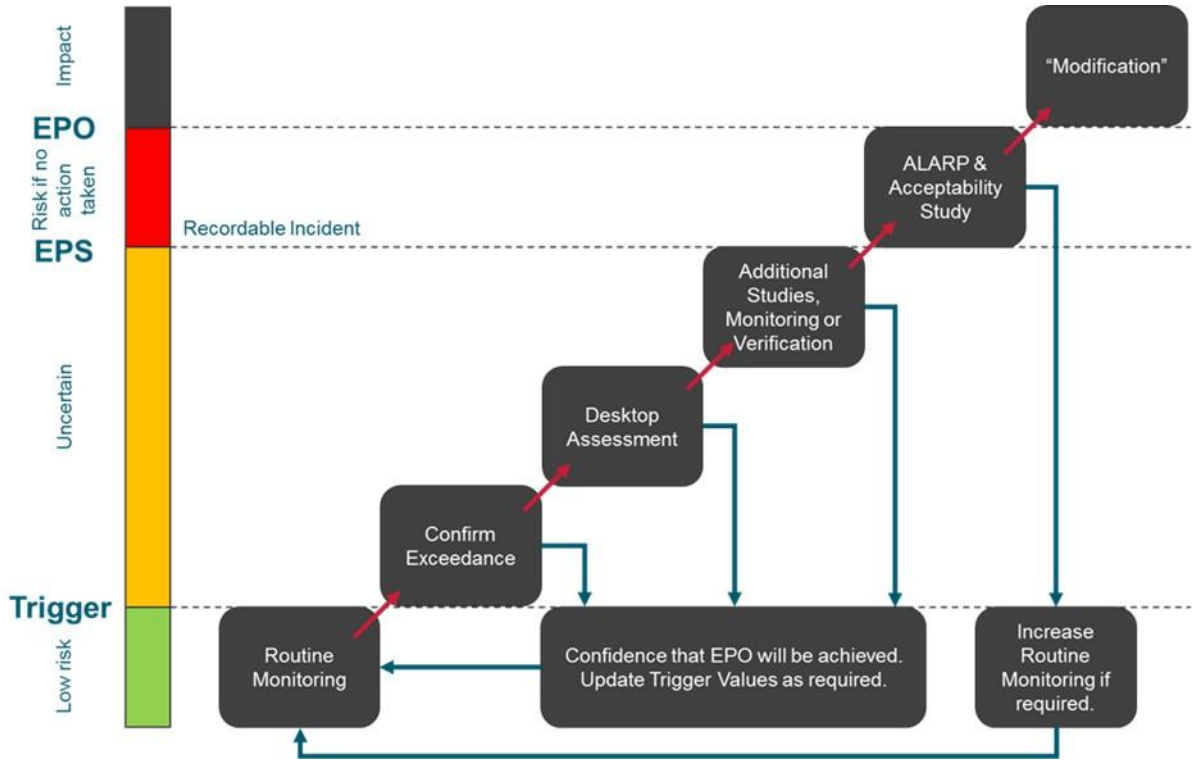


Figure 7-4 Routine monitoring and adaptive management framework for produced water

7.2.6.3 Further investigations

Detectable exceedances in trigger values may occur without impacting the environment. To provide confidence that environmental impact has not occurred outside the approved mixing zone boundary, further investigation would be required (Figure 7-4) in the form of a desktop study to initially assess the exceedance in context of available data and confirm if there is potential for impact to the environment. A desktop assessment is necessary before undertaking additional in-field monitoring. This ensures monitoring programs are designed and implemented to provide robust findings based on good survey design.

A range of methods can be used to detect trigger value exceedances (e.g. relative percentage difference, control charts, multivariate analysis, etc.) depending on the dataset available. An appropriate method is selected as described in the OMDAMP due to the variable nature of environmental data. If critical data are not available, the desktop study identifies potential data gaps and may recommend additional non-routine studies and/or monitoring to ensure the assessment is appropriately undertaken. The purpose of the 'further investigations' step is to provide certainty that the EPO has been achieved, if a trigger value has been exceeded. The key investigation steps are described below:

- **Confirm the trigger value has been exceeded** – Review quality assurance and quality control, methodology and possible sources of contamination to determine if the results are reliable, or if any factors have occurred that may compromise the integrity of the monitoring or data. If necessary repeat monitoring.
- **Desktop assessment to understand whether the EPO is at risk** – If a trigger value is confirmed to be exceeded, multiple lines of evidence are considered including historical and current data from routine and non-routine monitoring and studies. This assessment shall consider whether there is adequate evidence to demonstrate that acceptability criteria have been met and (EPO not breached). If the desktop assessment determines that the existing body of evidence is insufficient, it shall outline what additional monitoring or studies are required. Potential additional monitoring/studies may include but is not limited to:
  - single species test (collected annually in parallel with routine chemical characterisation should further investigation be required)

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- dilution modelling and or studies
- flocculation, sedimentation, settling velocity and/or dispersion analysis
- metal bioavailability
- scanning electron microscopy and particle size distribution analyses
- in-situ monitoring (water quality and/or sediments).

Routine monitoring activities may be required ahead of schedule and additional monitoring not listed may be undertaken as appropriate. Field monitoring is undertaken in accordance with a plan that details timing, locations and objectives of monitoring.

- Conduct additional studies to confirm the EPO is not at risk – Monitoring results provide additional lines of evidence to determine whether there is a risk of environmental impact at the mixing zone boundary due to unacceptable changes in water quality resulting in changes to sediment, or biological indicators. Given the significant health, safety and technical risks, logistics and planning required, monitoring of the receiving environment is typically only considered when all other sources of evidence are insufficient to demonstrate that the EPO is not at risk. The OMDAMP provides detailed guidance on the steps and actions required to be undertaken if a trigger value is exceeded and this may include additional non-routine monitoring to verify that environmental impacts have not occurred outside the boundary of the mixing zone.

If triggers are being exceed but no impact to the environment is predicted to occur the desktop assessment may consider development of site-specific trigger values in line with ANZG. For example, if chemical characterisation identified copper as exceeding trigger - ANZG 99% DGV but further investigations concluded levels observed were consistent with baseline and naturally occurring in the region. If potential impacts to the environment are identified, an ALARP/Acceptability Study is required to determine what additional controls can be implemented to ensure the impacts are not realised.

7.2.6.4 ALARP/Acceptability Study

An ALARP/Acceptability study is conducted once it has been determined, as a result of further investigations, that there is potential for an impact that exceeds the acceptable limits of change. The ALARP/Acceptability study shall be conducted in accordance with the ALARP Demonstration Procedure, to determine additional controls that may be necessary to reduce the potential impacts. Additional management measures (controls) may include technology, process upgrades or reservoir management. Woodside will implement the additional controls identified in the ALARP/Acceptability study that are required to give confidence that the acceptable limits of impact can be achieved.

In the event sampling of MEG salts indicates that there is a potentially significant pathway for mercury to enter the marine environment, the study would need to consider as a minimum volumes, duration, source, speciation and potential for settlement. The ALARP study may implement measures such as:

- well management,
- in-boarding,
- collection of MEG salts for onshore disposal,
- increased non routine monitoring,
- in-situ monitoring,
- remediation,
- technology or process upgrades.

In the event WET testing identifies a higher-than-expected effluent toxicity the study would need to consider discharge volumes, duration, well line up, potential drivers of toxicity. The ALARP study may recommend the following:

- non routine WET testing,
- operational discharge limits,
- change out of process chemicals if appropriate or reduce dosing rates, implement

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- well management,
- in-boarding,
- in-situ monitoring,
- technology or process upgrades.

In the event in-situ plume measurement and analysis of plume dilution indicates that the EPO may not be met the study would need to consider discharge volumes, discharge toxicity, well line up, process chemicals and baseline data. The ALARP study may recommend:

- implement discharge limits,
- well management
- in-situ monitoring,
- technology or process upgrades,
- in-boarding,
- change out of process chemicals if appropriate or reduce dosing rates

7.2.6.5 Review and revision

This OMDAMP is typically reviewed annually to incorporate the following:

- Completion of the annual OMDAMP compliance review – incorporating any recommendations for further assessment and/or updates to the monitoring framework
- Recently accepted EPs - incorporating any new/amended monitoring commitments/triggers
- Regulatory inspections - incorporating any relevant findings or recommendations
- Updates to key guidelines, guideline values or changes to recommended sampling/ methodologies.

7.2.7 Risk management

Risk management processes and practices are applied on an ongoing basis to manage risks to personnel, assets and the environment.

Potential environmental consequences and impacts from the Petroleum Activity are risk assessed and controlled in accordance with the Woodside risk management processes described in Section 2 of this EP.

In addition, other risk sub-processes and practices are also applied within Woodside on an ongoing basis to manage different types of risk. A summary of those relevant to the Petroleum Activity is provided below. Woodside's risk management processes, along with the supporting risk sub-processes and practices discussed in this section, ensure the environmental impacts and risks of the activity continue to be identified and reduced to a level that is ALARP.

7.2.7.1 Management of risks – contracting and procurement

Suppliers and contractors play a significant role in meeting the resource needs of Woodside's operations, including the facility operations. Effective management of environmental risks in contracts is achieved by setting clear expectations and managing environmental risks throughout the duration of the contract. Environmental risks in contracts are managed under the Contracting and Procurement Procedure supported by the Health, Safety and Environment in Contracting Guideline. The guideline provides a risk-based approach to contractor selection and management and is aligned with 'HSE Management – Guidelines for Working Together in a Contract Environment' (International Association of Oil and Gas Producers, Report No. 423).

The Engineering Standard: Quality Requirements for Supply of Products and Services defines specific quality requirements for engineering contracts and purchase orders. The specified quality control requirements in the Standard are required to be complied with as applicable to the scope of supply.

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7.2.7.2 Management of risks – subsea activities

Subsea activities are managed in line with the Subsea and Pipelines Integrity Management Procedure which defines the practices and technical requirements that must be applied to deliver and safeguard integrity of the subsea equipment and pipelines during the facility lifecycle. It provides the relationship between the PSM Framework (including management of change [MOC]) and Subsea and Pipelines Group services processes.

Inspection, monitoring, maintenance and repair (IMMR) activities are managed under the Manage IMMR Work Procedure. Risk assessments are conducted as required under this procedure.

These requirements are supported by implementing the Subsea Construction and Inspection, Maintenance and Repair Environment Screening Questionnaire tool. The screening questionnaire is used to understand the scope of the activity, potential environmental impact and if additional regulatory approvals are required. To achieve this, the questionnaire captures key activity information such as seabed disturbance, chemical use and waste. This information is used by an environment focal point to determine if further assessment is required. For activities that have the potential for environmental impact, an assessment is undertaken against this EP and other Woodside environmental requirements. If determined by the Subsea and Pipeline Environment Screening Questionnaire process, an EP Management of Change (MoC) review undertaken to confirm if the level of environmental risk warrants revision and resubmission of an EP.

Key environmental requirements and regulatory commitments are communicated to subsea teams and incorporated into key documentation where applicable and required (i.e. not addressed via existing Woodside practices).

7.2.7.3 Management of risks – major projects

Major projects are required to follow the Appraise and Develop Management Procedure and the Investment Management Framework. This procedure defines the requirements to deliver a commercially valuable production facility or modification to an existing facility. The process workflow requires integrating work from various functions using their people and processes, including Environment (e.g. HSE philosophy and regulatory approval requirements).

These requirements are supported by implementing the Brownfields Environment Screening Questionnaire tool. The screening tool is used to determine if a project has the potential for environmental impact or requires additional regulatory approvals. For projects that have the potential for environmental impact, an environmental focal point is assigned and the risks and impacts assessed against the facility EP and other Woodside environmental requirements.

Key environmental requirements and regulatory commitments are communicated to project teams and incorporated into key project documentation where applicable and required (i.e. not addressed via existing Woodside practices).Where it is identified that the project scope has the potential to result in modification or change to the facility description provided in the EP, or where potential new environmental risks or impacts or increases in an existing environmental risk or impact are identified, an EP MoC review is undertaken to confirm if the level of environmental risk warrants revision and resubmission of an EP.

7.2.7.4 Management of risks – well integrity

Wells are managed throughout their lifecycle in line with the Woodside's Manage Well Delivery Standard and Well Integrity Management Standard, which define the requirements for design, construction, operation and maintenance of wells to ensure containment of hydrocarbon and well fluids.

All wells associated with the Petroleum Activity are required to have a regulator-accepted Well Operations Management Plan (WOMP), which demonstrates that well integrity risks are understood and managed to ALARP and acceptable levels.

7.2.7.5 Management of risks – marine services

Woodside's Marine Services Function provides a platform for the conduct of safe and efficient marine operations across Woodside through Marine Services Management. A set of procedures that support vessel assurance and management (including HSE and quality management) are in place to ensure marine operations are conducted in a safe and efficient manner, and in accordance with regulatory requirements.

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7.2.7.6 Management of risks – emissions and energy management

Emissions generation and energy use is managed in line with the Greenhouse Gas (GHG) Emissions and Energy Management Procedure which defines the minimum mandatory requirements to manage and deliver continuous improvement in energy efficiency and reduction in GHG emissions. The procedure supports the implementation of the Climate Policy and aligns with the requirements of the Environmental Management Standard, applicable to assets in Operate phase. It supports the 'operate out' component of limiting net emissions, as shown in the Woodside Climate Change Policy.

Implementing the GHG Emissions and Energy Management Procedure assists in meeting external expectations, such as Woodside's net equity Scope 1 and 2 GHG emissions reduction targets of 15% by 2025[115] and 30% by 2030, and our aspiration for Net Zero by 2050 or sooner[116]. Woodside delivered its 2025 net equity Scope 1 and 2 GHG emissions reduction target.[117] [118] [119]These targets apply across Woodside's portfolio and progress against targets are reported in annual corporate disclosures. Meeting these corporate reduction targets may mean additional net voluntary abatement beyond that required by the SGM.

The GHG Emissions and Energy Management Procedure is consistent with other initiatives, such as the Zero Routine Flaring Initiative for oil assets, the OGMP 2.0, OGCI Near-Zero, and Methane Guiding Principles. Section 3 of the WMS Climate Management Standard aims for assets that emit material amounts of methane to continually reduce methane through leak detection and repair, annual routine monitoring, accountability and governance, improving methane emissions data and increasing transparency through reporting and for emissions that cannot be mitigated, implement appropriate controls consistent with the principles of the OGCI Near-Zero. The Woodside Flare Framework is a WMS tool that seeks to improve awareness of flaring-related issues and influence for reduced flaring.

The GHG Emissions and Energy Management Procedure links to the annual review of opportunities to improve energy performance through identification and evaluation as described in the Production Optimisation and Opportunity Management Procedure. It also requires measurement, analysis and communication of energy performance across the Operations Division and consideration of actual or potential impacts to energy efficiency in company decision-making, such as MOC, operational decisions, issue resolution options analysis and facility optimisation plans.

Identification considers a wide range of opportunities, including those that require formal allocation of budget and resources (longer term), as well as opportunities that can be executed as part of day-to-day operations. Opportunities identified are to be evaluated and implemented in a manner consistent with the Production Optimisation and Opportunity Management Procedure. The Environmental Performance Procedure requires that assets measure, monitor or estimate direct air and GHG emissions, and that such emissions and energy intensities are minimised to ALARP in design. The requirement to set, measure and track flare and emissions targets for assets, help to manage the emissions to meet the requirements of the EPS.

7.2.7.6.1 Production optimisation and opportunity management

The Production and Opportunity Management Procedure outlines the process for identification, prioritisation and management of production opportunities that maximise production revenue or reduce emissions intensity across Woodside operated assets. Opportunities are identified throughout the year in various meetings, forums and teams. In addition, formal opportunity identification takes place through annual

[115] Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 Mt CO2 -e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets.

[116] Net equity Scope 1 and 2 GHG emissions reduction targets and aspiration are relative to a starting base of 6.27 Mt CO2-e which is representative of the gross annual average equity Scope 1 and 2 GHG over 2016–2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets, inclusive of those required to meet regulatory obligations.

[117] *Ibid.*

[118] Achievement of the target reflected a combination of underlying emissions performance at our facilities and the use of carbon credits. These net equity GHG emissions were 15% below the starting base for the 12-month period ending 31 December 2025.

[119] In relation to our 2025 equity Scope 1 and 2 GHG emissions, 1283 kt CO2-e carbon credits were retired in order to meet our target of 5334 kt CO2-e net equity Scope 1 and 2 GHG emissions. This includes retirement of carbon credits subsequent to the period, after full year 2025 gross equity Scope 1 and 2 GHG emissions were calculated and externally assured

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workshops, which complement the identification of improvement opportunities. These opportunities are prioritised and managed according to the workflow shown in Figure 7-5.

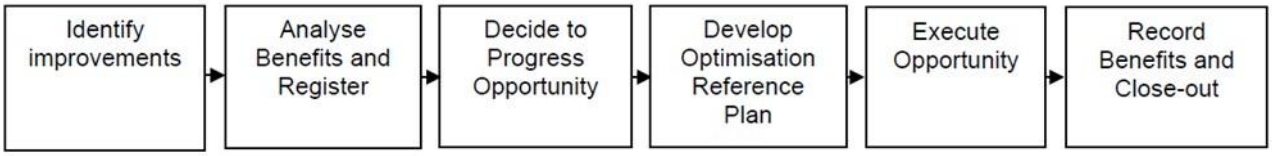


Figure 7-5: Opportunity management workflow

Production opportunities are evaluated and progressed, based on value and confidence of return, within the constraints of technical feasibility, cost and other factors. Implemented opportunities are validated and recorded before close out.

7.2.7.6.2 Fuel and flare target setting

In demonstrating the impacts and risks relating to fuel and flaring have been reduced to ALARP, fuel and flare targets for the facility are set annually in accordance with Woodside's Greenhouse Gas, Energy and Flare Target Setting Guideline. Targets are estimated based on operating experience and forecast activities; e.g. shutdowns. Consideration is also given to the flaring estimates contained within this EP.

The fuel and flare target is tracked against fuel and flare performance throughout the year. Where achieving a flare target is in question, an internal flare target deviation is developed, which requires an ALARP justification. A flare target deviation considers EP flare estimates. If estimate is likely to be exceeded, an EP MoC assessment (see Section 7.10.1) is undertaken to determine if a revision and resubmission is required.

7.2.7.7 Management of risks – Indirect emissions management

As stated in the Climate Policy, Woodside's objective is to thrive in this energy transition as a low cost, lower-carbon[120] energy provider. Woodside aims to achieve this objective by:

- setting science-based[121] near, mid, and long-term net emissions reduction targets that are consistent with Paris-aligned[122] scenarios, covering equity scope 1 and 2 emissions, both operated and non-operated[123].
- developing and operating oil and gas projects in a manner that is consistent with these targets. This includes the deployment of lower-emission technologies (Design Out), supporting efficient operations (Operate Out) and use of robust offsets (Offset) as methods to reduce and offset greenhouse gas emissions.
- investing in new energy products and lower-carbon[69] services to reduce customers' emissions (part of Woodside's Scope 3 GHG emissions), including but not limited to hydrogen, ammonia and carbon capture, utilisation and storage.
- publishing transparent climate-related disclosures aligned to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) or other recognised global reporting standards.

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[120] Woodside uses this term to describe the characteristic of having lower levels of associated potential GHG emissions when compared to historical and/or current conventions or analogues, for example relating to an otherwise similar resource, process, production facility, product or service, or activity.

[121] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of "science-based" (published 2021) which states "targets are considered 'science-based' if they are in line with what the most recent climate science sets out is necessary to meet the goals of the Paris Agreement—limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius.". See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related disclosures-prototype.pdf (Appendix A).

[122] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of "Paris-aligned scenarios" (published 2021) which states "scenarios consistent with limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius." See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related disclosures- prototype.pdf (Appendix A).

[123] Equity emissions means the share of the total emissions arising from an activity that are attributable to Woodside in proportion to Woodside's ownership interest in the activity, irrespective of whether Woodside operates the activity. Operated emissions are the total emissions arising from an activity that Woodside operates, irrespective of Woodside's ownership interest.

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- aligning our advocacy to the principles of this Climate Policy.

Woodside's Scope 3 GHG emissions approach includes the introduction of new energy products and lower-carbon[69] services into our portfolio, like hydrogen and CCS which can help our customers avoid or reduce their Scope 1 and 2 GHG emissions.[124]

We have set two related Scope 3 targets. The first, to invest US$5 billion in new energy products and lower-carbon services by year end 2030 (investment target). The second, to take FID on new energy products and lower-carbon services by year end 2030, with total abatement capacity of 5 Mtpa CO_2-e (emissions abatement target). [125,126,127] The investment target tracks our work to develop these projects and bring them to market. The emissions abatement target will track their potential impact on customer emissions.

Investing in products and services for the energy transition is also supported by three levers: assessing investments for their resilience to the energy transition; diversifying our products and services; and supporting our customers and suppliers to reduce their emissions.

These levers are further supported by our work to promote global measurement and reporting – including our own publication of transparent disclosures.

Progress against these targets is reported annually in Woodsides annual disclosures. Targets are not set for individual facilities, including GWA, but are assessed corporately.

7.2.7.7.1 Annual Review

An annual review of the implementation and outcomes associated with Woodside working with the natural gas value chain to reduce emissions in third party systems via corporate activities will be undertaken. Additionally, progress against corporate Scope 3 investment and abatement targets will be reported annually in relevant Woodside annual disclosures. If they are deemed to be effective at a corporate implementation level, then it will also be deemed that specific impacts and risks at an asset contribution level (i.e. proportion attributable to GWA production) are also being managed appropriately.

If the annual review deems the controls are not effective, an EP management of change assessment (see Section 7.10.1) is undertaken to determine if a revision and resubmission is required.

7.2.7.8 Management of human factor related risks

The term 'human factors' is used to describe the consideration of people as part of complex systems. Woodside defines 'human factors' as follows: 'human factors uses what we know about people, organisation and work design to influence performance'.

Human factors can contribute to MEEs, or result in failure or degradation of the controls in place to protect against MEEs. The WMS includes several procedures designed to manage human factors related risks and prevent incident causation.

7.2.8 Change management

The Change Management Procedure describes requirements for change management at Woodside owned or controlled operations/sites.

Change management is used where there is no existing approved business baseline, such as a process, procedure or accepted practice, or where conformance with an approved baseline is not possible or

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[124] For information on the Scope 3 methodology utilised to prepare our Scope 3 targets, please see our 2023 Climate Transition Action Plan available on our website. https://www.woodside.com/docs/default-source/investor-documents/major-reports-(static-pdfs)/ctap2023/climate-transition-action-plan-and-2023-progress-report.pdf

[125] Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment.

[126] Scope 3 investment target includes pre-RFSU spend on new energy products and lower-carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside's net equity Scope 1 and 2 greenhouse gas emissions which are managed separately through asset decarbonisation plans.

[127] For information on the Scope 3 methodology utilised to prepare our Scope 3 targets, please see our 2023 Climate Transition Action Plan available on our website. https://www.woodside.com/docs/default-source/investor-documents/major-reports-(static-pdfs)/ctap2023/climate-transition-action-plan-and-2023-progress-report.pdf

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intended; for example, due to equipment fault or failure or a recently discovered issue which will take time to rectify. Change management is also used when the baseline is changed (e.g. the process is modified). It applies to management of temporary, permanent, planned or unplanned change encompassing one or more of:

- plant (equipment, plant, technology, facilities, operations or materials)
- projects (budget, schedule)
- people (organisation structure, performance, roles)
- process (WMS content, processes, procedures, standards, legislation, information).

Woodside's change management process hierarchy is depicted in Figure 7-6. The hierarchy has been developed with sub-processes to address the different types of change performed at Woodside.



Figure 7-6: Change management hierarchy

To help manage the day-to-day operation of the facility, Woodside has developed a Golden Safety Rules Booklet, which summarises mandatory requirements for safety in the workplace and includes guidance for managing changes that have a Health, Safety, Integrity and/or Environment impact.

7.2.8.1 Technical change management

Technical changes within the Operations Division are managed using the Management of Change – Assets Procedure. The objective of the procedure is to ensure HSE risks associated with both realised and potential changes, including any failure to meet the facility SCE Technical Performance Standards, are identified, assessed and reduced to ALARP (Section 7.2.9 provides further information on management of SCE Technical Performance Standards).

Assessed changes must be recommended, agreed and decided upon based on the assessed current level of risk, as defined by Woodside's Technical Decision Authority matrices.

The management of change requirements contained in the Process Safety Management Procedure and Management System Performance Standard M05 Management of Change are considered when conducting any changes with the potential to impact process safety.

The Engineering Management Procedure specifies key requirements of engineering related changes, and requires that engineering Technical Decisions are agreed, recommended and decided at the appropriate engineering authority level according to the risk. Change management and risk assessment include consideration of applicable legislation/regulation.

Change is also managed under management system requirements set out as part of major projects (Brownfields), wells integrity, subsea and pipelines integrity management and marine management system. Change management includes consideration of regulatory requirements, managed in accordance with the Regulatory Compliance Management Procedure.

In addition, the Management of Change MSPS (M05) is in place to assure process safety risks arising from change (temporary and permanent) are systematically identified, assessed and managed.

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7.2.9 Management of safety and environment critical element technical performance standards and management system performance standards

7.2.9.1 Management system performance standards

Woodside ensures safety-critical management processes function as required by applying MSPS. MSPS are developed and owned at non facility-specific level (i.e. pan-Woodside) and include assurance checks for the key requirements of the applicable management system.

Individual facilities demonstrate conformance against the MSPS through the conduct of reviews. Non-conformances against an MSPS are internally managed in accordance with the WMS.

7.2.9.2 Safety and environment critical element technical performance standards

An SCE is defined by Woodside as a hardware barrier, the failure of which could cause or contribute substantially to, or the purpose of which is to prevent or limit the effect of a MAE/MEE, or Process Safety Event.

Woodside identifies/develops, implements, monitors/assures and verifies/optimises SCEs by applying SCE Technical Performance Standards as described in the Safety and Environment Critical Element Management Procedure. Key elements of the procedure are summarised in Table 7-3.

Table 7-3: Safety and environment critical element management procedure summary

Identify/Develop	**Safety and Environment Critical Element Management Procedure** Identify SCE – SCEs must be identified from the facilities process safety risk assessments (PSRAs) (Section 2.2.2). The identification of SCEs for which Performance Standards are required are part of the formal safety and environmental risk assessment processes. Woodside's Global Performance Standards (based on industry and Woodside Standards) should be used for preliminary selection of SCEs. Complete Engineering Design Studies – Engineering design studies must be completed to demonstrate that SCE Performance Criteria specified in the global Performance Standard and/or determined by PSRA will be met by the facility design, allowing for normal SCE degradation in operation. The studies must establish the testing and inspection tasks required to assess performance against the criteria. The scope and frequency of SCE Assurance Tasks are guided by the Global Performance Standard and may require designated Engineering Design Studies. Studies should include Reliability Centred Maintenance, Risk Based Inspection and Safety Instrumented Function studies to determine the Assurance Task scope and frequencies, risk-based inspection plans, and classification and implementation requirements for instrumented safeguarding. Develop Performance Standards – Facilities must develop Performance Standards for all SCEs by: • selecting the applicable Global Performance Standard (including Assurance Tasks) • considering facility-specific requirements and applicable regulatory requirements • adding the specific data from the facility Engineering Design Studies and PSRA to compile scope and frequency of SCE assurance activities.
Implement	**Management of Hardware Controls in the Operate Phase Procedure** Identify SCE in Asset Register – SCEs must be uniquely identified on the asset register and assigned Performance Standard flags. Develop Testing, Inspection and Maintenance Programs – SCE assurance tasks are developed into maintenance procedures. Implement Testing, Inspection and Maintenance Programs – SCE testing, inspection and maintenance requirements must be implemented in the CMMS (Section 7.2.1.2).

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Maintain/Assure	**Management of Hardware Controls in the Operate Phase Procedure** Execute Testing, Inspection and Maintenance Programs – On completing SCE assurance tasks, results must be recorded with all relevant detail, assessed for conformance with the Performance Criteria and any follow on correction work identified. Conduct Fitness for Service Assessment – In some instances, an engineering fitness for service assessment may be required to determine whether equipment has failed its performance standard requirements; e.g. assessment of corrosion defects following inspection of piping. Detailed results of fitness for service assessment may be recorded out of CMMS. Manage and Analyse Results – The results from assurance tasks must be accurately recorded to support data analysis. Analysis will enable appropriate action to be taken to minimise future failure recurrences, and enable assessment of overall system performance and reliability to verify SCE effectiveness in revealing failures and to allow predictive maintenance.
Respond	**Control of Operational Risk Procedure** Respond to SCE Failure – SCE failure (Technical Performance Standard non-conformance) is a failure to achieve the given Performance Criteria. SCE failures must be managed in accordance with a structured review process. This process may require the application of the facility MOPO which provides prescriptive guidelines to be followed in the event of a reduction in the performance of an SCE or managed in accordance with the Control of Operational Risk Procedure. **Management of Hardware Controls in the Operate Phase Procedure** Report Internally – SCE failures that cause failure to meet the facility Performance Standard must be reported in accordance with the Health Safety and Environment Event Reporting and Investigation Procedure (Section 7.13.3). Report Externally – Failure to meet the facility Performance Standard may require external regulatory reporting. External communications must be in accordance with the Regulator Event Reporting – Western Australia – Guideline and the Regulator Event Reporting – Commonwealth of Australia – Guideline.
Verify/Optimise	Review SCE Performance – SCE performance reviews must be conducted to ensure requirements for maintaining SCE performance are being met. Manage Change – Any change to the Performance Standards must be conducted in accordance with the Change Management Procedure (Section 7.10.1).

SCE Technical Performance Standards are a statement of the performance required of an SCE (e.g. functionality, availability, reliability, survivability), which is used as the basis for establishing agreed assurance tasks and managing the hazard. An assurance task is an activity carried out by the operator to confirm that the SCE meets, or will meet, its SCE Technical Performance Standard. Examples of assurance tasks include inspection routines, maintenance activities, test routines, instrumentation calibration and reliability monitoring.

These assurance tasks are identified in the CMMS, flagged against their associated technical Performance Standard, and given the appropriate priority (defined as Technical Integrity). Management systems are in place to manage the completion of maintenance including that required for Technical Integrity assurance.

Events where the SCC/SCE have not met their specified performance criteria must be managed in accordance with a structured review process. This process may require the application of the facility MOPO which provides prescriptive guidelines to be followed in the event of a reduction in the performance of an SCE in specific defined circumstances; or, if the MOPO does not cover the event, according to procedures for the assessment and management of operational risk.

Internal notification of SCC failures must be made in accordance with maintenance management workflows. Failures to meet a Facility Performance Standard occur where SCC events lead to the functional objectives (goal and/or key requirement statements) of the facility Performance Standard for the SCE not being met (i.e. lost or unavailable), taking into account any redundancy inherent within the SCE. These events are reported in the Event Reporting Database as potential SCE Failure to Meet Facility Performance Standard Events.

These are internally reported as Hazard Events. Where ‘Failure to meet a Facility Performance Standard’ leads to a loss of hydrocarbon containment, or a release of energy, it is internally reported (and externally where relevant) as a Loss of Primary Containment or Environmental Spill event, depending on the nature of the release.

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Additionally, confirmed ‘Failure to meet a Facility Performance Standard’’ events for the SCEs identified in the MEE bowties may equate to a breach of EPOs and/or EPSs. The review to identify such events for external reporting considers whether the hazard event is relevant to environmental SCE functional objectives (goal and/or key requirements) of the SCE Facility Performance Standard and whether the event poses a risk to achieving EPOs and EPSs. The WMS Regulator Event Reporting Guideline (Australia) provides additional information regarding external SCE related reporting obligations.

There may also be planned changes/deviations from SCE Technical Performance Standards, these are managed via procedures for the assessment and management of operational risk and endorsed in accordance with the engineering management procedures (described further within Section 7.2.9). This management process ensures risks (including environment) are managed so that the planned change/deviation does not result in unacceptable impact or risk, remains ALARP and regulatory requirements are met.

An additional class of SCE exists to capture environment critical emissions monitoring and control equipment and is also managed under this process. The P31 Technical Performance Standard – Environmental Emissions Monitoring and Controls’ includes equipment required to comply with environmental legislation, Regulations, approval conditions or requirements which apply to the facility although not specifically required under the MEE bowtie analysis and SCE groupings.

The scope of P31 includes equipment such as that to maintain and monitor flare ignition, flow metering, and discharge quality of PW. P31 sets out key performance requirements for applicable equipment to meet regulatory requirements as appropriate to the reporting methods (e.g. NGERs Determination and NPI) and meet the functional intent of the system that the equipment supports (e.g. ensuring flare systems can be ignited, with monitoring in place to ensure the flare/pilots are lit). P31 also defines maintenance/assurance tasks for associated equipment (SCC), and is used to support change management, prioritisation and governance.

7.3 Woodside decommissioning framework

Decommissioning is a planned activity for the offshore oil and gas industry. Current best practice is for decommissioning to include:

- designing for decommissioning during the development phase of facilities
- removing property, equipment and infrastructure, such as a facility or a pipeline, and plugging wells associated with a Petroleum Activity
- assessing decommissioning options and opportunities during the operational life of the facility leading up to cessation of production
- selecting, developing and planning the selected decommissioning option
- executing decommissioning plans
- restoring the marine environment.

This is aligned with Section 572(3) of the OPGGS Act, which requires titleholders to remove property from the title area when it is neither used, nor to be used, in connection with the operations.

Under section 270(3) of the OPGGS Act, before title surrender, all property brought into the surrender area by any person engaged or concerned in the operations authorised by the permit, lease or licence must be removed or cause to be removed from the surrender area to the satisfaction of NOPSEMA, or arrangements that are satisfactory to NOPSEMA must be made in relation to the property. Sections 572(7) and 270(3) of the OPGGS Act provide scope for in-situ decommissioning and other arrangements to be made where it can be demonstrated that the risks and impacts are ALARP and acceptable as well as comply with all other Acts and relevant legislation.

7.3.1 Decommissioning in operations

Woodside's approach to closure and decommissioning is governed by the Closure Planning Standard within Woodside's Management System. The Standard requires that closure planning is considered throughout the asset lifecycle and that Closure Management Plans (CMPs) are prepared and maintained for all operated assets.

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For planning purposes, CoP for the GWA facility is currently estimated to be approximately 2036. This timing is indicative and subject to change based on reservoir performance and production forecasting.

Decommissioning planning for the GWA field is documented within the NWS Gas Offshore CMP and prepared in accordance with Woodside's Closure Planning Standard. The CMP documents the decommissioning strategy, asset inventory and indicative schedule, and is reviewed periodically to reflect current planning, regulatory expectations and decommissioning progress. Decommissioning end-state decisions and execution methodologies will be defined through the Select/Define phase and confirmed at EOFL.

Prior to decommissioning activities commencing post cessation of production (CoP), Woodside will submit decommissioning EP(s) to NOPSEMA that demonstrate environmental impacts and risks associated with decommissioning activities are reduced to ALARP and acceptable levels. Decommissioning EPs will be developed to meet the requirements of the OPGGS Act and OPGGS Environment Regulations, as well as any other relevant legislation in force at the time.

7.3.2 Facility decommissioning planning

Decommissioning planning generally commences two (2) to 10 years before ceasing production (**Figure 7-7**). The timeframe selected for decommissioning planning depends on the complexity of the facility and infrastructure requiring decommissioning.

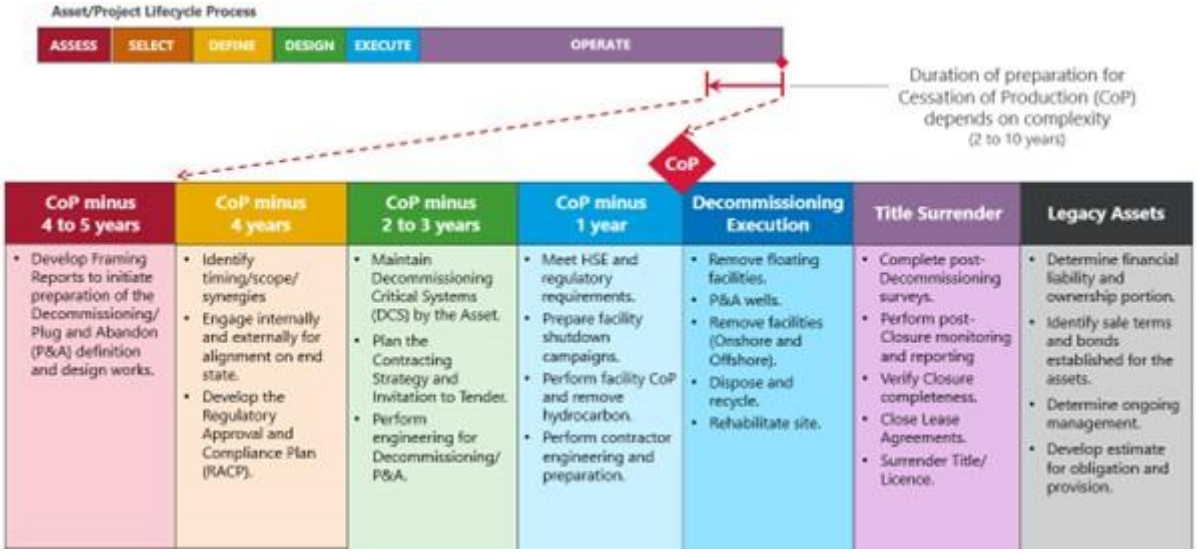


Figure 7-7: Woodside's process for decommissioning planning

7.3.2.1 Decommissioning critical systems

Woodside maintains all infrastructure and property bought onto the title area to allow safe, reliable and efficient decommissioning, in accordance with Section 572(2) of the OPGGS Act. As part of this approach, Woodside identifies and manages decommissioning critical systems, which are systems that need to remain functional to safely and efficiently deliver decommissioning activities.

Early identification of these systems and maintenance strategies that evolve through the operational phase, support readiness for safe and efficient decommissioning. Decommissioning critical systems are identified with consideration of safety, regulatory compliance, and functionality required to execute decommissioning activities. Maintenance plans are adapted through the Operate phase to reflect the evolving criticality of systems as the asset transitions toward CoP.

7.3.2.2 Management of redundant infrastructure

Where infrastructure is identified as potentially redundant, an assessment is undertaken to evaluate the risks associated with removal during operations compared with retaining the infrastructure in situ until end of field life (EOFL). This assessment considers safety, environmental and operational risks, and identifies appropriate control measures to ensure risks are reduced to as low as reasonably practicable (ALARP).

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The timing of decommissioning activities is informed by risk, operational constraints and efficiency considerations. Removal during operations is generally not assessed as ALARP where redundant infrastructure is integrated with live systems, located within or beneath active production infrastructure, or within the petroleum safety zone, due to the additional operational complexity and HSE risk associated with early removal.

Where redundant infrastructure is retained, appropriate preservation and maintenance measures are implemented to maintain integrity and ensure the infrastructure remains safe and suitable for future decommissioning. These measures may include inspection, monitoring, isolation and environmental protection measures.

Redundant infrastructure is tracked within the asset inventory. Decisions regarding retention in situ until EOFL are subject to periodic review and reflected in the CMP. This process does not apply to wells, which are managed under Woodside's well integrity management processes and the approved WOMP.

7.3.3 Inventory of property within the Petroleum Activity

The title areas relevant to this EP are WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L, and associated pipeline licences WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL and WA-27-PL.

The inventory of property associated with the GWA facility within these title areas, and within the scope of this EP are provided in Table 7-4, Table 7-5 and Table 7-6. The inventory includes both active and redundant infrastructure and is current at the time of EP submission.

Additional infrastructure installed during the life of this EP, including future developments such as GWF-4, will be incorporated into the inventory once installed. The decommissioning strategy for the infrastructure listed in Table 7-4 to Table 7-6 is described in Section 7.3.4.

Table 7-4: Inventory and status of surface infrastructure, production wells, redundant production wells and subsea infrastructure on the title areas relevant to this EP

Infrastructure	Status[1]	Number	Title(s)	Note
Facilities				
Goodwyn A platform and jacket	Active	1	WA-5-L	
Production wells[2]				
Perseus subsea wells (PER-01, PER-03)	Active	2	WA-1-L	
GWF-1 subsea wells (TPA01, TPA02, TPA03, GDA01, GDA02)	Active	5	WA-5-L	
GWF-2 subsea wells (SRA01, SRA02, KDA01, KDA02, LPA01, LPA02, LPA03, DOA01)	Active	8	WA-5-L, WA-6-L, WA-24-L, WA-57-L	
GWF-3 subsea wells (GDA03, GDA04, GDA05)	Active	3	WA-5-L	
GWA platform wells (GWA-01, GWA-03, GWA-05, GWA-08, GWA-10, GWA-13, GWA-16, GWA-17, GWA-18, GWA-19)	Active	10	WA-5-L	
Redundant production wells[3]				
Perseus subsea wells (PER-02, PER-04)[4]	Redundant	2	WA-1-L	Maintained for decommissioning (see Section 7.3.4.2)
GWA dry tree platform wells[5] (GWA-02, GWA-04, GWA-06, GWA-07, GWA-09, GWA-11, GWA-12, GWA-14, GWA-15)	Redundant	9	WA-5-L	Maintained for decommissioning (see Section 7.3.4.3)

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Infrastructure	Status[1]	Number	Title(s)	Note
Subsea structures				
Production manifold (GDA, TPA, DOA, KDA, LPA, SRA, PoG)	Active	7	WA-5-L, WA-6-L, WA-24-L, WA-57-L, WA-1-L	
PoG Pipeline End Manifold (PLEM)	Active	1	WA-1-L	
Pipeline End Terminations (PLETs)	Active	2	WA-5-L, WA-57-L	
Mid-Connection Structures (MCS)	Active	1	WA-5-L	
Spool Connection Assemblies (SCAs)	Active	4	WA-5-L, WA-6-L, WA-24-L, WA-57-L	
Tie-in Skids and Assemblies	Active	6	WA-1-L, WA-5-L, WA-6-L, WA-24-L, WA-57-L	
Subsea Isolation Valves (SSIVs) and Valve Skids	Active	3	WA-5-L	
	Redundant	1	WA-5-L	Relating to Echo Yodel. Maintained for decommissioning (see Section 7.3.4.1)
Subsea and Electrical Distribution Units	Active	7	WA-1-L, WA-5-L	
	Redundant	3	WA-1-L	Relating to PER02, PER04 wells. Maintained for decommissioning (See Section 7.3.4.2)
Umbilical Termination Assemblies (UTAs)	Active	23	WA-5-L, WA-6-L, WA-24-L, WA-57-L	
Splitter Boxes	Active	2	WA-5-L	
	Redundant	1	WA-5-L	Relating to Echo Yodel. Maintained for decommissioning (see Section 7.3.4.1)
Stabilisation and Anchors (Anchor piles, walking anchors and buckle initiators)	Active	45	WA-5-L	

1. Status at the time of EP submission.

2. Includes well infrastructure including wellhead and subsea tree (XT).

3. Plug and abandonment planned under the accepted NWS Phase 1 Plug and Abandonment and TPA03 Well Intervention EP (NOPSEMA Doc ID A1282745). Associated subsea infrastructure maintained with removal planned at EOFL. See Section 7.3.4.2 for further detail.

4. Wells are temporarily suspended and monitored and maintained under the approved GWA WOMP. Additional wells may become redundant during the life of this EP. See Section 7.3.4.3.

5. Associated with the Echo Yodel development. Will be retained and managed under this EP following completion of EY pipeline decommissioning. See Section 7.3.4.1 for further detail.

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Table 7-5 Inventory and status of pipelines, flowlines, risers and spools on the title areas relevant to this EP

Infrastructure	Status[1]	Number	Total length (m)	Title(s)
GWA Interfield Line (IFL) (30")	Active	1	23,287	WA-2-PL
PoG Pipeline (16")	Active	1	24,162	WA-13-PL
GWF-1 Pipeline (16")	Active	1	14,350	WA-24-PL
GWF-2 Pipeline (16")	Active	1	35,362	WA-27-PL
Rigid spools	Active	39	3,214	WA-1-L, WA-5-L, WA-6-L, WA-24-L, WA-57-L
	Redundant[2]	4	252	WA-9-PL
Flexible flowlines	Active	4	7,702	WA-5-L
	Redundant[3]	1	1,381	WA-1-L

1 Status at the time of EP submission.

2. Associated with the Echo Yodel development. Will be retained and managed under this EP following completion of EY pipeline decommissioning. See Section 7.3.4.1 for further detail.

[3] Redundant infrastructure associated with the PER02 and PER04 wells (WA-1-L) are integrated with live production infrastructure and will be maintained under this EP with removal is planned at EOFL (Section 7.3.4.2).

Table 7-6 Inventory and status of umbilicals and jumpers on the title areas relevant to this EP

Infrastructure	Status[1]	Number	Total length (m)	Title(s)
Umbilicals	Active	18	79,687	WA-1-L, WA-5-L, WA-6-L, WA-24-L, WA-57-L
	Redundant[2]	2	8,427	WA-1-L
Jumpers and flying leads[3]	Active	~ 128	~ 7,000 – 8,500	WA-5-L, WA-6-L, WA-24-L, WA-57-L, WA-1-L
	Redundant[2]	~ 13	~ 380 – 520	WA-1-L, WA-5-L

1. Status at the time of EP submission.

2. Redundant infrastructure associated with the PER02 and PER04 wells (WA-1-L) are integrated with live production infrastructure and will be maintained under this EP with removal planned at EOFL (Section 7.3.4.5). Three redundant EFL's associated with GWF 1 and GWF 2 are integrated within existing subsea infrastructure. These will be retained and maintained under this EP, with removal planned at EOFL, consistent with Section 7.3.2.2.

3. Jumper quantities and lengths are approximate as the inventory is subject to change through routine IMMR activities. The current detailed inventory is maintained in the GWA subsea inventory database.

7.3.3.1 Other infrastructure within the title areas

Other infrastructure located within the same title areas within the same title areas are outside the scope of this EP and are managed under separate accepted EPs. This includes infrastructure previously associated with GWA that has since transitioned to other accepted EPs. A summary of this infrastructure is provided in Table 7-7. The environmental impacts and risks associated with this infrastructure are assessed and managed under the respective accepted EPs and are not addressed within this EP.

Table 7-7 Other infrastructure in the title areas outside the scope of this EP

Infrastructure[1]	Title(s)	Relevant accepted EP
Echo Yodel subsea pipeline and associated ancillary infrastructure	WA-9-PL	Echo Yodel Subsea Decommissioning Environment Plan (A830461)
North Rankin complex facilities and associated infrastructure	WA-1-L, WA-2-PL	North Rankin Complex Facility Operations Environment Plan (A1294930)

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Infrastructure[1]	Title(s)	Relevant accepted EP
Redundant PoG production wells undergoing permanent plug and abandonment (PER-02 and PER-04)	WA-1-L	North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan (A1282745)
Exploration Temporarily Abandoned (ETA) wells: • Goodwyn-3 • Goodwyn-6 • Rankin-1 • North-Rankin-2 • North Rankin-3 • North Rankin-6	WA-1-L, WA-5-L, WA-24-L	NWS and Julimar Exploration Wellhead Decommissioning Environment Plan[2] (A1080491)
Abandoned wells with wellheads (AW) • Dockerell-1 • Goodwyn-1 • Goodwyn-5 • North Rankin-1 • North Rankin-5 • Tidepole-1 • North Rankin-4 • Goodwyn-4 • Haycock-1	WA-1-L, WA-5-L, WA-24-L, WA-57-L	NWS and Julimar Exploration Wellhead Decommissioning Environment Plan[2] (A1080491)

[1] Status at the time of EP submission.

[2] Yodel-3 (WA-23-L), Yodel-4 (WA-23-L), Goodwyn-2 (WA-5-L), Lady Nora-2 (WA-57-L) and Lowendal-1 (WA-57-L) wellheads have already been removed under this EP.

7.3.4 GWA decommissioning strategy

Subsequent sections provide an overview of decommissioning activities relating to redundant wells and infrastructure associated with the GWA title areas that are currently being planned or underway.

7.3.4.1 Echo Yodel subsea infrastructure decommissioning planning

The Echo Yodel subsea wells (EY3, EY4) have been accepted by NOPSEMA as permanently plugged and abandoned under the *Echo Yodel and Capella Permanent Plugging for Abandonment EP* (NOPSEMA Doc ID A772288). Associated wellheads, Xmas trees and flying leads were recovered between 2021 and 2025, and the Echo Yodel umbilical was removed in 2025 under the *Echo Yodel Subsea Decommissioning EP* (NOPSEMA Doc ID A830461).

The remaining Echo Yodel pipeline and ancillary subsea infrastructure are scheduled for removal under the *Echo Yodel Subsea Decommissioning EP* (NOPSEMA Doc ID A830461), with activities expected to commence late 2026 to early 2027.

Following pipeline removal, minor residual infrastructure within WA-5-L and WA-9-PL will remain in situ in close proximity to the GWA platform, including:

- production tie-in spool and riser between the SSIV structure and topsides;
- topsides riser piping;
- SSIV structure;
- control jumper from the splitter box; and
- electrohydraulic unit from the splitter box to topsides.

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This infrastructure is integrated with GWA platform systems and cannot reasonably be removed independently of the platform. It will be retained and maintained under this EP until EOFL decommissioning.

7.3.4.2 Perseus over Goodwyn wells plug and abandonment

Two of the PoG production wells (PER02 and PER04) are redundant and Woodside will be conducting plug and abandonment activities for these wells under the accepted North West Shelf Phase 1 Plug and Abandonment EP (NOPSEMA Doc ID A1282745). The project is currently in the Execution phase with planned P&A activities expected to be completed in 2026, subject to operational constraints. Monitoring of the two shut-in PER wells continues as per the approved WOMP and well integrity management procedure (Section 3.9).

The PoG pipeline connecting the PoG wells with the GWA platform remains in use transporting well fluids from production wells (PER01 and PER03). The PoG pipeline and producing wells (PER01 and PER03) will continue to be managed under this EP.

Due to the subsea architecture at PoG and the ongoing production from the remaining two wells in the field (PER01 and PER03), flushing of the PER02 and PER04 flowlines prior to well P&A is not considered viable. Instead, these flowlines may be partially depressured and valve isolations implemented to isolate the well from the production system. Flushing and disconnection of the flowlines will then be conducted as part of a future decommissioning scope at end of field life subject to a separate decommissioning EP.

The well infrastructure associated with PER02 and PER04 (XTs, wellheads and flowbases) will remain in situ until EOFL as these are required for future system flushing operations. There is potential that the subsea XTs may need to be removed during the P&A activity to enable access to the wellbore. In this instance, removal activities are covered under the accepted North West Shelf Phase 1 Plug and Abandonment EP. Well infrastructure relating to PER02 and PER04 that will remain in field following well P&A will be maintained under this EP to ensure infrastructure remains safe and suitable for future decommissioning at facility EOFL.

Subsea infrastructure associated with the PER02 and PER04 wells including the SDUs/CHTU, infield umbilicals, rigid spools and control jumpers will continue to be maintained after well plug and abandonment, with removal planned at EOFL. Removal during the operational phase is not considered to be ALARP, as the infrastructure is integrated with live production systems. Early removal would introduce additional operational complexity and increased HSE risks that can be avoided by deferring to coordinated EOFL decommissioning activities.

The impacts and risks of leaving the infrastructure in-situ until EOFL are covered in Section 6.

7.3.4.3 GWA dry tree platform wells decommissioning planning

Planning for P&A of redundant GWA dry tree platform wells is being progressed through Woodside's IMF process and has completed the Select phase, with Define-phase activities commencing in January 2027. The redundant wells are managed under the approved Goodwyn Operate WOMP and Woodside's well integrity management processes (Section 3.10). Additional wells may become redundant during the life of this EP as reservoir depletion progresses and these will be managed through the same planning process.

Work completed to date has established well-specific abandonment concepts and a preferred phased execution approach, informed by well integrity history, barrier condition and subsurface context. Current Define-phase activities are focused on maturing the technical, environmental and execution definition required to support future P&A execution and associated regulatory submissions.

Planning is also addressing execution strategy development, including identification of appropriate intervention methodologies, logistics considerations, and integration with ongoing operations to minimise risk and production impacts. The Define phase will confirm the preferred execution methodology and refine scope definition to support subsequent EP development.

7.3.4.4 Exploration wells decommissioning planning

Exploration Temporarily Abandoned (ETA) and Abandoned Wellhead (AW) wells with wellheads are located within the GWA title areas (refer Table 7-4). These wells are managed under the accepted *NWS and Julimar Exploration Wellhead Decommissioning Environment Plan* (NOPSEMA Doc ID A1080491).

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AW wells (refer Table 7-4) have previously been accepted as permanently abandoned and severance of AW wellheads are being progressed through Integrated Wellhead Removal campaigns.

The six ETA wells in the GWA title areas (Goodwyn-3, Goodwyn-6, Rankin-1, North Rankin-2, North Rankin-3 and North Rankin-6) have not yet been accepted as permanently abandoned. Detailed technical assessments have concluded that further well intervention is required to complete P&A and meet the criteria for acceptance as permanently abandoned. Until P&A is completed and accepted, the ETA wells continue to be managed under the Woodside's Suspended Exploration Wells - Well Operations Management Plan (WOMP) (G2000GD1401763008).

Planning for this scope is being progressed through Woodside's IMF framework, with Define phase activities underway. Define phase is focused on establishing sufficient abandonment design, execution and approvals definition to support transition to Design, including completion of key technical assessments, site surveys and execution strategy development.

Permanent abandonment of the ETA wells, and subsequent wellhead removal activities will be covered under a separate future decommissioning EP.

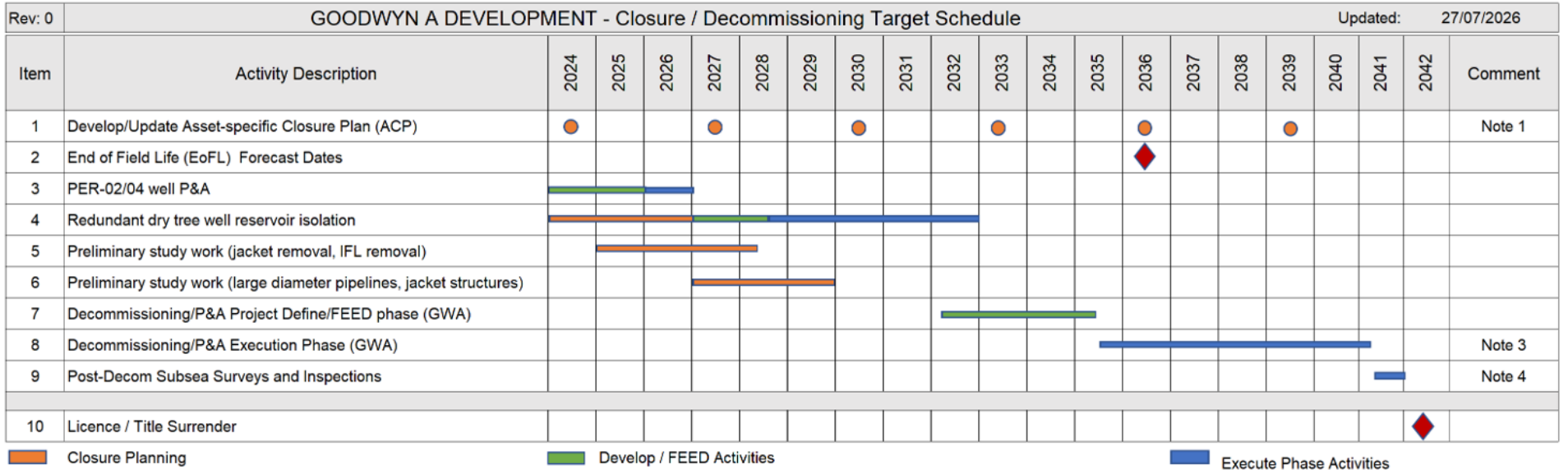
7.3.4.5 GWA facility and subsea infrastructure decommissioning planning

The GWA facility and broader subsea production system are anticipated to remain in service until EOFL and will be decommissioned as a coordinated EOFL activity. During the decommissioning planning phase, all infrastructure within scope will continue to be managed and maintained under this EP, with decommissioning planning predominantly comprising desktop studies and engineering design, supplemented by data from inspections and IMMR scopes delivered under the Petroleum Activity.

Flushing and preservation of subsea flowlines and associated infrastructure will be required prior to or following CoP. It is anticipated that flushing will be conducted from the GWA topsides to the reservoir, with flowlines temporarily preserved with treated seawater consisting of seawater treated with an oxygen scavenger and a biocide.

Consistent with Woodside's process (Figure 7-8) decommissioning planning for GWA will commence prior to CoP. Detailed planning entails technical engineering studies, contracting activities, approvals planning, consultation with stakeholders, and assessment of decommissioning options, timing and risk management. Decommissioning activities will be subject to separate decommissioning EPs.

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Notes:

1) The Asset Closure Plan (ACP) is updated regularly every three years , or more frequently if major changes to the Asset occur.
2) For clarity, ETA/AW wells and Echo Yodel are not shown. They are covered under separate EPs.
3) Risk based approach to scheduling, informed by NOPSEMA Compliance Strategy (2024-2029) for P&A within 3 years of EoFL and other property (as required) within 5 years of CoP
4) Post closure monitoring plan assumes that final survey and title surrender is completed within 5 years post completion of all decommissioning activities.

Figure 7-8: GWA decommissioning planning lifecycle and schedule

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7.4 Organisation Structure

The following Woodside organisational structure provides leadership and direction for operation of the facility and environmental performance:

- The Executive Vice President (EVP) and Chief Operations Officer (COO) Australia reports to the Chief Executive Officer (CEO).
- The VP North West Shelf reports to the EVP & COO Australia.
- The Asset Manager reports to the VP North West Shelf.
- The Reliability & Integrity Manager reports to the VP North West Shelf.
- The functional support teams report to the corresponding Business Unit.

All Production facilities are supported by a team of environmental professionals who report to the Production Environment Manager.

All facilities are supported by other Woodside functional teams, including:

- HSE – provides specific guidance and access to specialist HSE resources including assistance for governance and training, as well as guidance on Woodside HSE standards
- Subsea – responsible for the installation and IMMR activities on subsea infrastructure including facility structures, flowlines, manifolds and subsea isolation valves to ensure integrity
- Global Wells and Seismic – ensures the safe planning and execution of drilling, completion and work over operations
- Projects – responsible for the engineering, construction and execution of projects on operational facilities to ensure ongoing integrity and safe operation
- Marine Group – responsible for chartering vessels to support Woodside's offshore production facilities including vessels to aid emergency response
- Aviation Group – provides personnel transport, material transport, emergency evacuation and search and rescue capabilities.

7.5 Roles and responsibilities

Key roles and responsibilities for Woodside and contractor personnel relating to implementing, managing and reviewing this EP are described in Table 7-8. Roles and responsibilities for oil spill preparation and response are outlined in the Oil Pollution First Strike Plan (Appendix H) and the Woodside Incident Management Handbook.

It is the responsibility of Woodside and contractors to implement the Woodside Corporate Health, Safety and Environment Policy (Appendix A) in their areas of responsibility and to ensure that the personnel are suitably trained and competent in their respective roles.

Table 7-8: Roles and responsibilities

Title (role)	Environmental responsibilities
All personnel	
All facility-based personnel and onshore support personnel	• understand the Woodside standards and procedures that apply to their area of work • understand the environmental risks and control measures that apply to their area of work • carry out assigned activities in accordance with approved procedures and the EP • follow instructions from relevant supervisor with respect to environmental protection • cease operations which are deemed to present an unacceptable risk to the environment • participate in environmental assurance activities and inspections as required • prompt reporting of environmental hazards/incidents to their supervisor and assist in event investigation. • attend HSE meetings, training and drills when required.

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Title (role)	Environmental responsibilities
Office-based personnel	
Asset Manager	• accountable for ensuring all necessary regulatory approvals are in place to operate • approves (decides on) the content to be contained in the EP • accountable for managing the asset throughout its operations in accordance with legislative/regulatory requirements (including this EP) and WMS requirements. • approves written notification to regulatory authorities (for example notifications to NOPSEMA under this EP) • agrees facility key performance indicators (KPIs), including environment KPIs and is accountable for their achievement • accountable for incident notification, reporting and investigation in line with regulatory requirements, the WMS and EP requirements • decides on technical decisions where required based on assessed current level of risk • responsible for continuous improvement of operations of the facility, including environmental performance
Asset Superintendent	• responsible for the operation of the facility in accordance with legislative/regulatory requirements (including this EP) and the WMS. • accountable for aspects of integrity management. • accountable for conformance to production Operations processes including ISSoW. • decide on technical decisions where required based on assessed current level of risk. • communicate changes relevant to the EP to the Production Environment team.
Reliability and Integrity Manager	• steward of Reliability and Integrity for the business unit. • lead a team that expertly ensures that strategies for equipment maintenance and operation are set to meet Reliability, Performance and Integrity goals. • ensuring that the Safety Case, Performance Standard, Regulatory and Reliability driven maintenance tasks for all equipment are known and implemented in the most efficient maintenance strategy possible. • ensuring that Very High and Severe risks are assessed and controlled when they appear, and that the right technical expertise, including technical authorities, is engaged to understand, communicate and manage the risk, as part of the 'Agree' role in the Engineering Management Procedure. • ensuring that refresh of facility baseline risk assessments is completed upon trigger of re-assessment. • assuring that reliability and integrity delivery processes in the assets is being done to correct standard and engaging with relevant process owners.
Technical Support Lead	• responsible for safeguarding process safety with respect to the asset. • ensure technical integrity risks are identified, managed and reduced to ALARP. • recommend technical decisions where required based on assessed current level of risk.
Integrity Authorities (Technical Integrity Custodians, Technical Authorities and Engineering Authorities)	• agree technical integrity decision based on assessed current level of risk when discipline owner • undertake process safety responsibilities as defined under the Woodside process safety framework.
Environment Manager Australian Operations	• facilitate operations environmental approval documentation and timely submission in accordance with regulatory requirements. • facilitate review of the EP, including five-yearly revision and in relation to any technical decisions or proposed changes to operations. • ensure Asset and supporting personnel understand and adhere to legislative and regulatory environment requirements, EP requirements and the environmental requirements of the WMS.

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Title (role)	Environmental responsibilities
	• monitor and communicate to internal stakeholders relevant changes to legislation, policies, regulator organisation that may impact the EP or business. • develop and maintain appropriate Production environmental processes and procedures.
Environment Adviser Australian Operations	• manage change relevant to the EP in accordance with the regulations and the EP. • ensure environmental monitoring, offshore inspections, and reporting is undertaken as per the requirements of this EP. • coordinate and monitor closeout of corrective actions. • ensure environmental inspections/audits are undertaken as per the requirements of the EP. • ensure environmental incident reporting meets regulatory requirements (as described within the EP) and WMS.
Subsea and Pipelines (IMMR) Activity Manager	• ensure IMMR process undertaken in line with EP commitments • manage IMMR change requests for the activity and notify the Environment Adviser of any scope changes in a timely manner • provide sufficient resources to implement the EP requirements • monitor and close out corrective actions raised from IMMR environmental inspections/audits or incidents • responsible for governance of IMMR related activities for subsea support vessels.
Corporate Affairs Adviser	• prepare and implement the consultation plan for the petroleum activity • reporting on consultation • perform ongoing stakeholder liaison as required.
Woodside Marine Services Function	• conduct relevant audit and inspection to confirm vessels comply with relevant Marine Orders and Woodside Marine Charters Instructions requirements to meet safety, navigation and emergency response requirements
Woodside CIMT Deputy Incident Commander	On receiving notification of an incident, the Woodside CIMT deputy incident commander (IC) shall: • establish and take control of the Incident Management Team and establish an appropriate command structure for the incident • assess the situation, identify risks and actions to minimise the risk • communicate impact, risk and progress to the Crisis Management Team and stakeholders • develop the incident action plan (IAP), including objectives for action • approve, implement and manage the IAP • communicate within and beyond the incident management structure • manage and review safety of responders • address the broader public safety considerations • conclude and review activities.
Contractor Sponsors	• ensure implementation of EP for the contractor's scope of work • ensure contractors have adequate environmental capability in order to execute their respective scopes of work • review contractor environmental performance as required.
Offshore-based personnel	
GWA Offshore Installation Manager (OIM)	• in charge of the GWA facility and the field • accountable for implementation of the EP at the facility • ensures offshore personnel comply with regulatory/legislative requirements (including the EP) and the WMS • responsible for Area Operations compliance with Technical Integrity requirements including MoC process, Permit to Work process and MOPO and process safety requirements

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Title (role)	Environmental responsibilities
	• single point responsible person for the coordination of simultaneous activities • accountable for the performance and development of direct reports, ensuring operator capability and competency across all shifts and ensuring the skill requirements of the Production division are being met. • implement relevant offshore environment initiatives and review environmental performance to drive continuous improvement. • ensure effective communication with workforce on environmental performance • ensure incidents are reported and investigated in line with WMS and EP requirements, with appropriate actions initiated and closed out • lead response efforts (as Incident Controller) in managing emergency or crisis scenarios • ensure exercises and drills are conducted in a manner to assure the facility's ability to respond effectively to an emergency • decide on technical decisions where required based on assessed current level of risk • communicates changes relevant to the EP to the Production Environment team.
Frontline and Executive Superintendents, Operations and Maintenance Supervisors	• accountable for the day-to-day operations of the facility including effective shift handover; completion and logging of operator routine • responsible for operations shift compliance to all legislative and regulatory requirements as defined in the EP • responsible for permitting and isolation for all frontline work activities • responsible for following emergency response protocols in accordance with the emergency response procedure and fulfilling allocated emergency response roles • responsible for leading and coordinating a multi-disciplined team performing specific duties required to support the facility, including helicopter operations, vessel movements and consumable controls.
Operations and Maintenance Technicians	• responsible for all daily operations on the facility within their operational control. • undertake daily operational and maintenance tasks in accordance with approved standards and procedures to ensure compliance with the EP. • manage day-to-day environmental risks through use of ISSoW and other risk management tools. • identify opportunities for continuous improvement and communicate these to their Supervisor. • complete training requirements to maintain competence and knowledge in operating and maintaining equipment, and manage environmental risks and impacts. • participate in environmental assurance activities and inspections as required. • report all environmental hazards and incidents and assist in investigations.
Health, Safety and Environment Coordinator (HSEC)	• liaise with managers/supervisors on day to day management of environmental risks and issues • assist in the ongoing promotion of environmental performance at the facilities and day-to-day management HSE risks and issues • support operational personnel to understand the EP requirements applicable to their role • identify opportunities for continuous improvement and communicate these to the OIM and Environment Team • implement environmental improvement plans • communicate environmental performance information and training material to offshore personnel and maintain associated records.
Vessel-based personnel	
Vessel Master of Support Vessel (Platform and Subsea Support Vessels)	• understand and manage HSE aspects of the vessel, including environmental requirements • communicate with OIM as required regarding potential environmental risks applicable to vessel activities • ensure vessel meets quarantine requirements

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Title (role)	Environmental responsibilities
	• notify AMSA and other authorities of any incidents as per maritime requirements • provide, as requested by Woodside, copies of documents, records, reports and certifications (i.e. fuel use, ballast exchanges, waste logs, etc.) in a timely manner to assist in compliance reporting • ensure the vessel's Emergency Response Team have sufficient training to implement the vessel's SOPEP • ensure all emergency and SOPEP drills are conducted • ensure that vessel procedures are followed in the event of an emergency or spill • immediately notify the Woodside Representative of any environmental incidents.
Subsea and Pipelines Site Woodside Representative	• ensure relevant management measures in this EP are implemented on the Subsea Support Vessel • ensure periodic environmental inspections are completed • ensure environmental incidents or breaches of EPOs, EPSs or MCs are reported in accordance with Woodside and regulatory requirements • ensure Subsea Support Vessel induction attendance is recorded.

7.6 Training and competency

Woodside as part of its contracting process assesses a proposed contractor's environmental management system (EMS) to determine the level of compliance with the standard AS/NZ ISO 14001. This assessment is performed for the Petroleum Activity as part of the pre-mobilisation process. The assessment determines whether there is a clearly defined organisational structure that sets out the roles and responsibilities for key positions. The assessment also assesses whether there is an up-to-date training matrix that defines any corporate and site/activity-specific environmental training and competency requirements.

As a minimum, environmental awareness training is required for all personnel, detailing awareness and compliance with the contractor's environmental policy and EMS.

7.6.1 Inductions and training

Inductions are provided to all relevant personnel (e.g. contractors and Company representatives) before mobilising to or on arrival at the activity location. The induction covers the HSE requirements and environmental information specific to the activity location. Attendance records will be maintained.

The induction may include, but is not limited to:

- description of the activity
- ecological and socio-economic values of the activity location
- regulations relevant to the activity
- Woodside's Environmental Management System – Health Safety and Environment Policy
- EP importance/structure/implementation/roles and responsibilities
- main environmental aspects/hazards and potential environmental impacts and related EPOs
- oil spill preparedness and response
- monitoring and reporting on EPOs and standards using measurement criteria
- incident reporting
- inductions for offshore facility workers and visitors;
- operations competency framework training;
- permit to work training (ISSoW);
- production environmental leadership training and environment awareness training;
- emergency and hydrocarbon spill response training;

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- inductions for subsea IMMR (vessel based) personnel; and
- Unexpected Finds Procedure and reporting requirements (Section 6.7.2).

Records for Woodside operations personnel, in relation to the above-listed training, are maintained in Woodside's Learning Management System. Contractor training records are maintained in the Contractor Verification platform.

Competence of operations personnel can be reviewed via online dashboards.

7.6.2 Specific environmental awareness

Before the Petroleum Activity begins, a pre-activity meeting will be held onboard the facility and support vessels with all relevant personnel. The pre-activity meeting provides an opportunity to reiterate specific environmental sensitivities or commitments associated with the activity. Relevant sections of the pre-activity meeting will also be communicated to the support vessel personnel. Attendance lists are recorded and retained.

During operations, regular HSE meetings will be held on the facility and support vessels which cover all crew. During these meetings, recent environmental incidents are reviewed and awareness material presented.

7.6.3 Inductions for offshore facility workers and visitors

A comprehensive induction process is in place for personnel working on or visiting Woodside's offshore production facilities. The induction process is designed to equip personnel with the HSE awareness and skills necessary for them to manage their own safety and environmental performance and contribute to others working around them. The induction process includes:

- **Common Production Induction** – All employees and contractors who have not accessed a production facility within 12 months are required to undertake this induction prior to mobilisation. It includes Woodside's values, HSEQ and Process Safety, continuous improvement and risk management.
- **ISSoW** - All members of the workforce that are required to work with ISSoW receive training commensurate with the level of authority and responsibility they hold in ISSoW.
- **Facility Specific Induction** – All employees and contractors that have not accessed the production facility within twelve months are required to undertake this induction before or upon arrival at the facility. This induction covers the HSE and emergency response issues specific to each facility.
- **Production Offshore Environmental Leadership Training** – Key operations leadership roles (as specified within the Operations Competency Framework) are required to complete this competency on commencement of the new role and three yearly thereafter. The training covers Woodside's policies and standards, environmental legislative requirements, the EP, key environmental risk and impacts, environmental reporting, environmental management tools (e.g., improvement planning, compliance reviews and audits), hydrocarbon spill response and environmental accountabilities.
- **Production Offshore Environmental Awareness Training** – All new offshore operational personnel are required to undertake this online training on commencement of the new role and two yearly thereafter. This training covers environmental legislative requirements, the facility EP, key environmental hazards and control measures (including waste management, spill prevention, chemical storage, wildlife interactions as well as other relevant environmental aspects), environmental management tools, hazard and incident reporting, spill response, and environmental responsibilities.

7.6.4 Operations competency framework training

The Operations Competency Guideline outlines the requirements for competency and proficiency within the Australian Operations Division and informs individuals of their roles and responsibilities to ensure safe, reliable, and efficient operations. By doing this, the potential for unplanned (accident/incident) type events that could result in environmental impact is minimised.

Operational Area Licence to Operate (LTO) roles are those roles related to oil and gas processing, equipment maintenance, marine regulations, emergency response and any other roles involved with safeguarding the facility integrity, including all roles where high-risk work licences are required.

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The requisite competency and training for each LTO role has been defined. Competencies for these LTO roles are stipulated by the governance group for each respective position and are based on the relevant Australian or International standards which apply. In cases where no Australian or International standards are available or applicable, training is based on the relevant Woodside Standard as determined by the respective governance group.

Contractors working on Woodside facilities are required to verify the competency of their personnel through the contractor's own verification systems. Additionally, contractor personnel working on Woodside facilities are required to be registered in Woodside's Contractor Verification Service (CVS) beforehand. Personnel registered in CVS have had their skills and qualifications independently verified on behalf of Woodside thereby confirming that contractor personnel hold the required competencies before mobilisation to the facility.

The Woodside Competency Reporting Dashboard provides the conformance status of the facility against the LTO roles requirements.

7.6.5 Permit to work system training

The ISSoW permit to work (i.e., participation in crisis or emergency management exercises). Roles based training is further described in Section 7.14.

An overview of Woodside's hydrocarbon spill response training and competency requirements are provided in dashboards for key responder roles. The roles are consistent with Woodside's crisis and emergency management incident control structure system (see Section 7.2.1) is a key element in ensuring that all necessary steps are taken to ensure the safety of personnel, protection of the environment and technical integrity of the facility. The ISSoW system takes a risk-based approach to all activities, thus tasks with higher levels of risk are subjected to greater scrutiny and control.

All members of the workforce that are required to work with ISSoW (Section 7.2.1) receive training commensurate with the level of authority and responsibility they hold in ISSoW.

7.6.6 Emergency and hydrocarbon spill response training

All operations personnel involved in crisis and emergency management are required to commit to ongoing training, process improvement and participation in emergency and crisis response (both real and simulated), including emergency drills specific to potential incidents at the facility. Training includes task specific training and role-based training and 'on the job' experience.

Woodside Hydrocarbon Spill Preparedness Advisor(s) are responsible for maintaining hydrocarbon spill preparedness competency. This includes the identification and development of approved competency and non-competency-based courses, identification of relevant personnel required to undertake training and ensuring training records are maintained. Minimum Woodside capabilities will continue to be identified and documented.

7.6.7 Subsea inspection, monitoring, maintenance and repair activity environmental awareness

At the beginning of, and during a new subsea IMMR activity, the subsea support vessel crew including contractor crew, Woodside representatives and other relevant personnel are required to undertake a vessel induction before commencing work. This induction covers HSE requirements for the vessel and IMMR activities, and as required environmental information specific to the activity location. The induction may cover the following environmental information:

- adherence to standards and procedures, and the use of job safety analysis and permit to work hazard identification and management process;
- spill management including prevention, response and clean-up, location of spill kits and reporting requirements;
- waste management requirements and location of bins;
- reporting of marine fauna, location of forms and charts;
- chemical management requirements; and

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- Unexpected Finds Procedure and reporting requirements (Section 6.7.2).

All personnel who undertake the induction are required to sign an attendance sheet which is retained.

Regular HSE meetings are held on subsea support vessels with crew. During these meetings, any environmental incidents are reviewed, and environmental awareness material presented.

7.6.8 Management of training requirements

All personnel on the facility and support vessels are required to be competent to perform their assigned positions. This may be in the form of external or 'on the job' training. The vessel Safety Training Coordinator (or equivalent) is responsible for identifying training needs, keeping records of training performed and identifying minimum training requirements.

7.7 Monitoring, auditing, and managing non-conformance and review

Regulation 22(5) states that the implementation strategy is to provide for the monitoring, audit, management of non-conformance and review of operator's environmental performance and the implementation strategy itself.

This section of the EP outlines the measures undertaken by Woodside to regularly monitor the management of environmental impacts and risks of the Petroleum Activity against the EPOs, EPSs and MCs, with a view to continuous improvement of environmental performance. The effectiveness of the implementation strategy is also reviewed periodically as part of the monitoring and assurance process.

A key tool that is used throughout the implementation of the EP is Woodside's environmental compliance and action register (ECAR). This is an internal tool that is developed at EP acceptance and is maintained until the EP is closed. The ECAR contains all the commitments, controls, EPSs and MCs from the EP and tracks compliance against each of these items.

7.7.1 Monitoring

Woodside and its contractors will perform a program of periodic monitoring throughout the Petroleum Activity, from mobilisation of each activity through to activity completion. A summary of emissions and discharges monitoring is presented in Table 7-9. Monitoring will be undertaken using the systems and tools described below, which have been developed to demonstrate implementation of the EPOs, controls, EPSs and MCs described in this EP. These systems will collect, as a minimum, the evidence specified in the MCs presented in Section 6 and Appendix D. This information form part of Woodside's permanent compliance record and provide the basis for demonstrating that the EPOs and EPSs have been achieved, with outcomes summarised in routine reporting documents.

7.7.1.1 Source-based impacts and risks

The systems and tools to monitor environmental performance, where relevant, will include:

- daily reports which include leading indicator compliance
- periodic review of waste management and recycling records
- use of contractor's risk identification program that requires recording and submitting safety and environment risk observation cards routinely (frequency varies with contractor)
- collection of evidence of compliance with the controls detailed in the EP relevant to offshore activities by the Woodside Offshore HSE Adviser (other compliance evidence is collected onshore)
- environmental discharge reports that record volumes of planned and unplanned discharges downhole (in the well), to ocean and atmosphere
- monitoring of progress against the Global Wells and Seismic function and Operations Division scorecards for KPIs
- internal auditing and assurance program as described in Section 7.7.2.

Throughout this activity, Woodside will continue to identify and assess new source-based impacts and risks through monitoring and auditing systems and tools described above and in Section 7.7.2.

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Other examples of assurance tasks implemented through the EP include (as an example):

- start of shift operator walk arounds;
- permit to work hazard, risk management check list, area sign-on, and permit audits (ISSoW – Section 7.6.5);
- technical integrity SCE performance reviews (daily, weekly, monthly) (Section 2.5.5);
- ongoing maintenance performance assurance (e.g. conformance dashboard);
- management system performance audits reviews (e.g. MSPSs) (Section 7.7.2); and
- data gathering and governance dashboard presentations (e.g. Woodside Integrated Risk and Compliance System).

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Table 7-9 Summary of emissions and discharges monitoring for the Petroleum Activity

Category	Parameter to be Monitored/Reported	Monitoring Frequency	Monitoring Equipment/Methodology	EP Reference
Planned Emissions				
Atmospheric emissions	Greenhouse, energy and criteria pollutants	Normally continuous process metering/annual reporting	NGERS and NPO reporting estimation methods (e.g. fuel/flare flow meters, throughput meters, process estimation)	Section 6.7.7
	Fuel gas and flare intensity	Normally continuous process metering/monthly reviews	Fuel and flare flowmeters inform intensity profiles – tracked against optimisation targets	Section 6.7.7
Planned Discharges				
Discharge of subsea control fluids during valve actuations	Subsea control fluid consumption	Normally continuous process indication/monthly review	Subsea control fluid consumption surveillance. Process indication for gross leaks/ruptures	Section 6.7.4
Discharge of hydrocarbons and chemicals during subsea IMMR activities	Volumes of hydrocarbons and chemicals released subsea	As required, during IMMR activities (activity specific)	Estimates based on known volumes pumped and ROV observation	Section 6.7.4
Discharge of produced water	Volume discharged overboard	Normally continuous process indication/monthly review	PW flow meter(s), process estimation	Section 6.7.5
	OIW concentration of discharged PW	Normally continuous process indication/monthly review	Normally continuous process metering/monthly review	
	Chemical characterisation	Annually	Characterisation of end-of-pipe sample	
	WET testing	Three yearly	PW ecotoxicity testing	
Waste recycling and disposal	Quantities of solid and liquid wastes disposed of onshore	Ongoing	Facility waste manifest	Section 6.9.2
Unplanned Emissions and Discharges				
Unplanned emissions and discharges	Nature of release	As required	HSEQ Event Reporting System (First Priority)	Section 6.8 and 6.9

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7.7.2 Auditing

Environmental performance auditing will be performed to:

- identify potential new, or changes to existing environmental impacts and risks, and methods for reducing those to ALARP
- confirm that mitigation measures detailed in this EP are effectively reducing environmental impacts and risks, are practicable and provide appropriate information to verify compliance
- confirm compliance with the EPOs, EPSs and MCs detailed in this EP.

Internal auditing will be performed to cover key activities as summarised below.

7.7.2.1 Support vessel activities

The following internal assurance will be performed for vessel-based activities:

- A pre-mobilisation inspection/audit will be conducted by relevant personnel. The scope of the audits are risk-based and specific to the relevant activity, but will generally focus on aspects relating to ensuring appropriate understanding of environmental commitments and the operational readiness of the activity scope, including appropriate environmental controls in place. All vessels associated with identified scopes will be audited by Woodside.
- At least one operational compliance audit relevant to applicable EP commitments will be conducted by a Woodside Environment Adviser for subsea support vessels. The audit may be conducted offshore or be office-based, subject to the duration of the activity and logistics of performing the audit offshore for short duration scopes.
- Contractor-specific HSE audits will also be conducted of all support vessels. The audits will consider the implementation of HSE management, risk management, as well as pre-mobilisation and offshore readiness.
- Vessel-based HSE inspections will be conducted fortnightly by vessel HSE personnel. Each inspection will focus on a specific risk area relevant to the activity and a formal report will be issued (for example, bunkering controls, chemical and discharge management, cetacean reporting, etc).
- Annual inspection of Woodside's long-term hire support vessels are undertaken to ensure compliance with both the EP and the approved Contractor Management system.

The internal audits and reviews, combined with the ongoing monitoring described in Section 7.7.1, and collection of data referenced in the MC are used to assess EPOs and EPSs.

As part of Woodside's EMS and/or assurances processes, activities may also be periodically selected for environmental audits as per Woodside's internal auditing process. Audit, inspection and review findings relevant to continuous improvement of environmental performance are tracked through the ECAR.

This Environmental Commitments and Actions Register is used to track support vessel and subsea activity compliance with EP commitments, including any findings and corrective actions.

Non-conformances identified will be reported and/or tracked in accordance with Section 7.7.3.

7.7.2.2 Operations assurance

The Provide Assurance Procedure and the Provide Assurance Guideline ensure that risks are managed while business activities are being performed. The Guideline aims to explain how the Operations Division Assurance Team implements WMS Assurance requirements, while concurrently satisfying the Operations Division's specific objectives.

Operations Assurance Assignments are contained within the Operations Division Integrated Assurance Assignment Plan.

Environmental assurance activities are conducted on a regular basis to help:

- Verify environmental risks and potential impacts are being managed in accordance with the EPOs and EPSs;

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- Monitor, review and evaluate the effectiveness of the EPOs and EPSs;
- Verify effectiveness of the implementation strategy; and
- Identify potential non-conformances.

The outputs of the assurance process are corrective actions that drives continuous improvement.

7.7.2.3 Annual offshore inspection / desktop review

An inspection or review of the GWA facility is undertaken every calendar year by the Production Environment Team. Selected risk areas and/or activities are inspected against relevant EPOs and EPSs. The outcomes verify that control measures are effective in reducing the environmental impacts and risks to ALARP and an acceptable level.

The inspection or review also assesses conformance with selected aspects of the implementation strategy. All risk sources and activities applicable to the GWA facility are reviewed over a rolling three-year period. Records of findings, together with the close-out of any corrective or improvement actions, are maintained, with action close-out tracked in Woodside's action tracking system.

7.7.2.4 Marine assurance

Woodside's marine assurance is managed by the Marine Assurance team in accordance with the Offshore Vessel Assurance Standard. The Woodside process is based on industry standards and consideration of guidelines and recommendations from recognised industry organisations such as Oil Companies International Marine Forum and International Maritime Contractors Association.

The process is mandatory for all vessels (other than tankers and floating production storage and offloading vessels) hired for Woodside operations, including for short-term hires (i.e. <3 months in duration). It defines applicable marine offshore assurance activities, ensuring all vessel are fit for duty, meet the requirements for a defined scope of work and are managed with a robust Safety Management System.

The process is multi-faceted and encompasses the following marine assurance activities:

- offshore vessel management system assessment (OVMSA)
- dynamic positioning (DP) assessment
- vessel inspections
- offshore vessel inspection database (OVID) or condition and suitability assessment
- support for tender review, evaluation and pre/post contract award.

Vessel inspections are used to verify actual levels of compliance with the operator's Safety Management System, the overall condition of the vessel and the status of the planned maintenance system onboard. A Woodside marine assurance specialist will conduct a risk assessment on the vessel to determine the level of assurance applied and the type of vessel inspection required.

Methods of vessel inspection may include, and are not limited to:

- Woodside Marine Vessel Inspection
- Oil Companies International Marine Forum OVID Inspection
- International Marine Contractors Association Common Marine Inspection Document Inspection
- Marine Warranty Survey.

Upon completion of the assurance process, a statement of approval is issued by the Woodside Marine Assurance team confirming that identified concerns have been addressed appropriately and that the imposed conditions are being management.

If a vessel inspection and/or OVMSA verification review is not available and all reasonable efforts based on time and resource availability have been made to complete this (e.g. short-term vessel hire), the marine assurance specialist offshore may approve the use of an alternative means of inspection, known as a risk assessment.

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Environmental requirements specific to PSV contractors are communicated via Woodside marine charterers instructions. This document provides the Master of a vessel on hire to Woodside with a clearly defined set of requirements and procedures for operating the vessel in the vicinity of the Woodside's operating facilities. This includes the management of environmental risks and impacts from the facility. The document includes information on:

- applicable legislation and guidelines;
- roles and responsibilities;
- marine fauna interaction guidance; and
- incident reporting requirements.

Environmental requirements specific to subsea support vessels are communicated via the Subsea Environmental Compliance Package. This document outlines mandatory environmental management requirements for subsea support vessels and associated contractors.

7.7.2.5 Risk assessment

Woodside conducts a risk assessment of vessels where either an OVMSA Verification Review and/or vessel inspection cannot be completed. This is not a regular occurrence and is typically used when the requirements of the assurance process are unable to be met or the processes detailed are not applicable to a proposed vessel(s). The Marine Vessel Risk Assessment will be conducted by the Marine Assurance Specialist, where the vessel meets the short-term hire prerequisites.

The risk assessment is a semi-quantitative method of determining what further assurance process activity, if any, is required to assure a vessel for a particular task or role. The process compares the level of management control a vessel is subject to against the risk factors associated with the activity or role.

Several factors are assessed as part of a vessel risk assessment, including:

- Management control factors:
  - Company audit score (i.e. management system)
  - vessel HSE incidents
  - vessel Port State Control deficiencies
  - instances of Port State Control vessel detainment
  - years since previous satisfactory vessel inspection
  - age of vessel
  - contractors' prior experience operating for Woodside.
- Activity risk factors:
  - people health and safety risks (a function of the nature of the work and the area of operation)
  - environmental risks (a function of environmental sensitivity, activity type and magnitude of potential environment damage (e.g. largest credible oil spill scenario))
  - value risk (likely time and cost consequence to Woodside if the vessel becomes unusable)
  - reputation risk
  - exposure (i.e. exposure to risk based on duration of activity)
  - industrial relations risk.

The acceptability of the vessel or requirement for further vessel inspections or audits is based on the ratio of vessel score to activity risk. If the vessel management control is not deemed to appropriately manage activity risk, a satisfactory company audit and/or vessel inspection may be required before awarding work.

The risk assessment is valid for the period a vessel is on hire and for the defined scope of work.

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7.7.3 Management of non-conformance

Woodside classifies non-conformances with EPOs and standards in this EP as environmental incidents. Woodside employees and contractors are required to report all environmental incidents, and these are managed as per HSE Event Reporting and Investigations Work Instruction which includes learning requirements.

An internal computerised database called First Priority is used to record and report these incidents. Details of the event, immediate action taken to control the situation, investigation outcomes and corrective actions to prevent recurrence are all recorded. Corrective actions are monitored using First Priority and closed out in a timely manner.

Woodside uses a consequence matrix for classification of environmental incidents, with the significant categories being A, B and C. Detailed investigations are completed for all categories A, B, C and high potential environmental incidents.

7.7.4 Review

7.7.4.1 Management review

Within the relevant Environment teams, regular reviews of the effectiveness of the implementation strategy are undertaken at a frequency commensurate with the impact and risk profile of the Petroleum Activity. This review may consider:

- Operations Division key performance indicators (KPIs)
- effectiveness of tools and systems to monitor environmental performance
- lessons learned from implementation during previous campaigns or activities
- reviews of oil spill arrangements and testing performed in accordance with this EP.

Within each Asset team or Business Unit, managers review environmental performance regularly, usually though incident and event reporting and monthly HSE reports. The outcome of such reviews will inform whether further action is required to address key or recurring environmental performance matters.

7.7.4.2 Learning and knowledge sharing

Learning and knowledge sharing occurs via several different methods including:

- event investigations
- event bulletins
- formal and informal industry benchmarking
- cross-asset learnings
- engineering and technical authorities discipline communications and sharing.
- review of impacts, risks and controls across the life of the EP.

7.7.4.3 Continuous improvement

Continuous improvement (CI) projects that involve refurbishment, modification or major maintenance on the facility are typically managed by Offshore Development and Delivery Engineering Teams and are required to follow Appraise and Develop management procedures. Currently, the procedures require that all projects be managed in accordance with the Investment Management Framework which supports the progressive maturation of an opportunity through value creation in the Assess and Select Phases and the maintenance of value in the Develop and Execute phases.

To support the accountable executive to make a decision on whether a CI Project should proceed to the next phase in the Investment Management Framework, it is sometimes necessary to conduct a trial of the modification to determine the outcomes that can be expected if the modification is implemented. Due to prioritisation of resources, the phased progress of opportunities, competition between different solutions and long-term strategic and financial considerations, it is not possible to set quantitative success criteria to

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determine whether a modification will be implemented based on the results of trials. Instead, the results of a trial are used to inform a decision on whether to progress the CI Project to the next phase in the Investment Management Framework. Decisions are typically made with two key considerations; whether the business is ready to proceed which has a technical/functional focus and whether there is a business case for progressing to the next phase. The business case may consider the ALARP position for the CI Project, if relevant.

7.8 Management of knowledge

Relevant knowledge of the existing environment, socio-economic context and regulatory framework is periodically reviewed to identify changes that may influence the environmental impact and risk assessments for this EPs.

Knowledge reviews are undertaken on both routine and ad hoc basis, including quarterly and annual reviews and as information becomes available. These reviews encompass:

- environmental science: updates from scientific literature, government publications and Woodside-supported studies, including information relating to species, habitats and Matters of National Environmental Significance under the EPBC Act.
- socio-economic environment and stakeholder information: updates from published sources and consultation activities
- environmental legislation: monitoring of regulatory changes and alignment with applicable requirements.

A management of knowledge tracker is maintained to record reviews and updates. Relevant new information is communicated through regular cross-functional environmental forums, where it is assessed to determine whether changes to impacts, risks or controls are required.

The documentation of reviews, communication of relevant new knowledge, and consideration of MOC, are documented in the WMS EP Delivery Guideline. Table 7-10 outlines the formal quarterly management of knowledge review frequency and the due dates for finalisation of the associated report.

Table 7-10: Management of knowledge review frequency

Management of knowledge review	Quarterly final report due date
1st Quarter Review (1st Jan - 31st Mar)	31st March
2nd Quarter Review (1st April -30th Jun)	30th June
3rd Quarter Review (1st Jul - 30th Sep)	30th September
4th Quarter Review (1st Oct - 31st Dec)	31st December

Where new information may affect the environmental risk profile or control framework, it is assessed and managed through Woodside's Management of Change (MoC) process (Section 7.10). Under the AEP Joint Industry Operational and Scientific Monitoring (OSM) arrangements, environmental baseline information is reviewed annually and updated as required. This includes maintenance of the environmental baseline database and identification of data gaps. Any additional studies required by Woodside are coordinated by the Biodiversity and Science Team.

7.9 Management of newly identified impacts and risks

New sources of impacts and risks identified through monitoring and auditing systems and tools, and the Woodside Environment Knowledge Management System are assessed using the Change Management Process.

7.10 Management of change and revision

7.10.1 Environment Plan management of change

Management of changes are managed in accordance with Woodside's Environmental Approval Requirements Australia Commonwealth Guideline. Management of changes relevant to this EP, concerning the scope of the activity description described in this EP including: review of advances in technology at

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stages where new equipment may be selected such as vessel contracting; changes in understanding of the environment, EPBC Act listed threatened and migratory species status, Part 13 statutory instruments (recovery plans, threat abatement plans, conservation advice, wildlife conservation plans) and current requirements for AMPs; and potential new advice from external stakeholders, will be managed in accordance with Regulation 39 of the Environment Regulations.

Risk will be assessed in accordance with the environmental risk management methodology detailed in this EP to determine the significance of any potential new environmental impacts or risks not provided for in this EP. Risk assessment outcomes are reviewed in compliance with Regulation 39 of the Environment Regulations.

Minor changes where a review of the activity and the environmental impacts and risks of the Petroleum Activity do not trigger a requirement for a formal revision under Regulation 39 of the Environment Regulations, will be considered a 'minor revision'. Minor administrative changes to this EP, where an assessment of the environmental impacts and risks is not required (e.g. document references, phone numbers, etc.), will also be considered a 'minor revision'. Minor revisions as defined above will be made to this EP using Woodside's document control process. Minor revisions will be tracked in an MOC Register to ensure visibility of cumulative impact and risk changes, as well as enable internal EP updates/reissuing as required. This document will be made available to NOPSEMA during regulator environment inspections.

7.10.2 Oil Pollution Emergency Plan management of change

Relevant documents from the OPEP will be reviewed in the following circumstances:

- implementation of improved preparedness measures
- a change in the availability of equipment stockpiles
- a change in the availability of personnel that reduces or improves preparedness and the capacity to respond
- the introduction of a new or improved technology that may be considered in a response for this activity
- to incorporate, where relevant, lessons learned from exercises or events
- if national or state response frameworks and Woodside's integration with these frameworks changes.

Where changes to the Oil Pollution Emergency Plan (OPEP) are identified through the reviews described above, they will be assessed against Regulations 38 and 39 of the Environment Regulations to determine whether resubmission of the EP (including the OPEP) is required.

Changes that do not trigger EP resubmission are managed through Woodside's Management of Change (MoC) process and documented in relevant records. These changes are incorporated into the OPEP through internal updates or at the five-yearly EP revision, as appropriate.

7.11 Record keeping

Regulation 22(6) of the Environment Regulations requires records of emissions and discharges to be maintained.

Compliance records referenced in MCs contained within this EP will be maintained. Many of the MCs listed in this EP refer to 'records'. Woodside considers 'records' to mean any hard or soft copy of information such as data, observations, certifications or photographs that can show a point in time and can be duplicated such that they can be stored in compliance systems and/or provided to internal and external auditors (i.e. NOPSEMA) on request.

7.12 Ongoing consultation

Although consultation for the purpose of Regulation 25 is complete, in accordance with Regulation 22(15) of the Environment Regulations, the implementation strategy must provide for appropriate consultation with relevant authorities of the Commonwealth, a State or Territory and other relevant interested persons or organisations.

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Woodside engages in ongoing consultation with relevant persons throughout the life of the EP, including undertaking the engagements listed in Table 7-11. New information identified during ongoing consultation will be assessed as appropriate using the EP Management of Knowledge system and Management of Change Process.

Woodside hosts community forums on a regular basis at which members are provided updates on Woodside activities (for example community liaison group meetings). Representatives who are present at those meetings are from community and industry and include Woodside, State Government (for instance relevant Regional Development Commissions), local government, Indigenous groups, industry representative bodies, community and industry organisations.

Relevant persons and others who are interested in Woodside activities, can otherwise remain up-to-date through subscribing to receive Consultation Information Sheets and other information via the Woodside website, or by accessing the publicly available EP on NOPSEMA's website.

Woodside supports ongoing engagement with Traditional Custodians, which complies with Woodside policies, strategies and procedures and is directly informed by feedback from Traditional Custodians

It provides a mechanism for ongoing dialogue so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the activity and in relation to caring for and managing country, including Sea Country. The approach will be tailored to each Traditional Custodian group and may include, as agreed with relevant Traditional Custodians:

- social investment to support Indigenous ranger programs
- support for Indigenous oil spill response capabilities
- support for recording Sea Country values
- support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader oil and gas industry on activities
- development of ongoing relationships with Traditional Custodian groups
- any other initiatives proposed for protecting Country, including cultural values.

At the time of EP submission, a number of specific activities as part of ongoing consultation regarding the Petroleum Activity are planned with Traditional Custodians. Where Traditional Custodian relevant persons have requested information or further engagement considered as ongoing consultation, , these requests have been captured in Table 7-11.

Table 7-11: Ongoing consultation engagements

Report/ information	***Recipient***	***Purpose***	***Frequency***	***Content***
Notification (email)	AHO	As requested by AMSA and AHO during consultation	Notify AHO no less than 4 weeks prior to commencement of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	PS 1.6 (Section 6.7.1) Date of activity start.
Notification (email)	AMSA JRCC	Standard practice	Notify JRCC prior to commencement of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	PS 1.7 (Section 6.7.1) Date of activity start.

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Report/ information	Recipient	Purpose	Frequency	Content
		Standard practice	Notify JRCC prior to activities where vessels will be undertaking activities in, or within 1 km of, shipping lanes and the vessel will be connected to the seabed.	PS 1.8 (Section 6.7.1) Date of activity start.
Notification (email)	WAFIC, Recfishwest, AFMA, DPIRD, DAFF – Fisheries, CFA	Standard Practice	At least 10 days prior to commencement and following completion of activities where vessels will be in the Operational Area, but outside of the Petroleum Safety Zone >3 weeks.	PS 1.9 (Section 6.7.1) Date of activity start and end.
Notification (email)	Director of National Parks	Standard Practice as required by Class Approval.	Notify DNP at least 10 days prior to all activities occurring within the Montebello AMP – Multiple Use Zone (excluding transiting) and at the conclusion of that activity.	PS 1.10 (Section 6.7.1) Date of activity start and end.
		As requested during consultation	Notify DNP upon acceptance of this EP.	PS 1.10 (Section 6.7.1)
Notification of significant change (email)	All relevant persons	Standard practice (when notification of significant change is needed)	As needed.	Notification of significant change.
Emails/ Meetings	Persons or organisations who provide feedback to Woodside post EP submission	Identification, assessment and consideration of feedback, claims and/or objections	As appropriate.	Assessment of claims and/ or objections. Relevant new information will be assessed using the EP Management of Knowledge (Section 7.8) and Management of Change Process (refer to Section 7.10).

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Report/ information	Recipient	Purpose	Frequency	Content
Notification (email)	Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure (Section 7.2.5).	Report any unexpected finds of potential Underwater Cultural Heritage	If triggered by Unexpected Finds Procedure (Section 7.2.5).	Refer to Unexpected Finds Procedure (Section 7.2.5 and PS 3.2).
Various forms of engagement including but not limited to emails, phone calls and meetings.	Relevant cultural authorities who provide information to Woodside following submission.	Identification, assessment and consideration of cultural values relevant to the Petroleum Activity.	When engaged or as appropriate.	Relevant new information on cultural values received by Woodside will be assessed using the EP Management of Knowledge (Section 7.8) and Management of Change Process (Section 7.10). 7.87.10

7.13 Reporting

To meet the EPOs and EPSs outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

7.13.1 Routine reporting (internal)

7.13.1.1 Daily progress reports and meetings

The following daily reports containing environmental performance information are issued:

- pan-Woodside Daily Production Report – The report includes facility performance information on production and a log of any HSE events; and Pan-Woodside Daily Production Report – The report includes facility performance information on production and a log of any HSE events; and
- subsea support vessel Daily Progress Report(s) – During subsea IMMR activities, daily reports are issued by the Woodside Site Representative. Subsea support vessel Daily Progress Report(s) – During subsea IMMR activities, daily reports are issued by the Woodside Site Representative. The reports provide performance information on HSE events, diesel use, together with equipment information, current and planned work activities.

Meetings between key personnel are used to transfer information, discuss incidents, agree plans for future activities and develop plans and accountabilities for resolving issues.

7.13.1.2 Regular health, safety and environment meetings

Dedicated HSE meetings are held with offshore and Perth-based management and advisers to address targeted HSE incidents and initiatives. Minutes of these meetings are produced and distributed as appropriate.

7.13.1.3 Performance reporting

Monthly and quarterly performance reports are developed and reviewed by the Australian Operations HSE Function and Business Unit Leadership Teams. These reports cover several subject matters, including:

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- HSE incidents (including high potential incidents and those related to this EP) and recent activities
- corporate KPI targets, which include environmental metrics
- outstanding actions as a result of audits or incident investigations
- technical high and low lights

7.13.2 Routine reporting (external)

7.13.2.1 Start and end notifications of the Petroleum Activity

In accordance with Regulation 54, Woodside will notify NOPSEMA within ten days of the completion of the Petroleum Activity.

The EP will end when Woodside notifies NOPSEMA that the Petroleum Activity has ended, all of the obligations identified in this EP have been completed, and NOPSEMA has accepted the notification, in accordance with Regulation 46 of the Environment Regulations. The Petroleum Activity is not expected to end within the five-year life of this EP.

7.13.2.2 Cetacean and whale shark sighting reporting

Woodside will keep a record of any cetacean and whale shark sightings for the life of this EP. A sightings report will be submitted to the Australian Antarctic Division annually with the reporting period being by calendar year.

7.13.2.3 Environmental performance review and reporting

In accordance with applicable environmental legislation, Woodside is required to report information about environmental performance to the appropriate regulator. Regulatory reporting requirements are summarised in Table 7-12.

Table 7-12: Routine external reporting requirements

Report	Recipient	Frequency	Content
Monthly Recordable Incident Reports (Appendix E)	NOPSEMA	Monthly, by the 15th of each month	Details of recordable incidents that have occurred during the Petroleum Activity for previous month (if applicable)
Annual Environment Plan Performance Report	NOPSEMA	Annually, by the 30th April of the year following reporting period	• Compliance with EPOs, controls and EPSs outlined in this EP, in accordance with the Environment Regulations • Decommissioning progress update
National Pollutant Inventory (NPI) Report	DCCEEW	Annual, by the 30th September each year	• Summary of the emissions to land, air and water including those from the facility. Reporting period 1 July to 30 June each year.
National Greenhouse and Energy Reporting (NGERS)	Clean Energy Regulator	Annual, by the 31st October each year	• Summary of energy use and greenhouse gas emissions including those from the facility. Reporting period is 1 July to 30 June each year.
Cetacean and Whale Shark Sightings Report	Australian Antarctic Division	Annually, by 31 January each year	• Summary of any sightings of cetaceans or whale sharks. Reporting period is 1 Jan to 31 December.

7.13.3 Incident reporting (internal)

The process for reporting environmental incidents is described in Section 7.7.3. All Woodside employees and contractors are required to report environmental incidents and non-conformances with this EP. Incidents are reported using an Event Report Form which includes details of the event, immediate action taken to control the situation, and corrective actions to prevent reoccurrence.

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7.13.4 Incident reporting (external) – Reportable and recordable

7.13.4.1 Reportable incidents

A reportable incident is defined under Regulation 5 of the Environment Regulations as:

- ‘an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage’.

A reportable incident for the Petroleum Activity is:

- an incident that has caused environmental damage with a Consequence Level of Moderate (C) or above (as defined under Woodside’s Risk Table)
- an incident that has the potential to cause environmental damage with a Consequence Level of Moderate (C) or above (as defined under Woodside’s Risk Table).

The environmental risk assessment for the Petroleum Activity identifies those risks with a potential consequence level of C+ for environment. The incidents that have the potential to cause this level of impact include hydrocarbon loss of containment events to the environment resulting from:

- well loss of containment (MEE-01)
- subsea equipment loss of containment (MEE-02)
- topsides loss of containment (MEE-03)
- loss of structural integrity (MEE-04)
- loss of marine vessel separation (MEE-05)
- loss of control of suspended load (MEE-06)

Any such incidents represent potential events which would be reportable incidents. Incident reporting is performed with consideration of NOPSEMA (2025) guidance, stating ‘if in doubt, notify NOPSEMA’, and assessed on a case-by-case basis to determine if they trigger a reportable incident as defined in this EP and by the Environment Regulations.

7.13.4.1.1 Notification

NOPSEMA will be notified of all reportable incidents, according to the requirements of Regulations 47, 48 and 49 of the Environment Regulations. Woodside will:

- report all reportable incidents to the regulator (orally) as soon as practicable, but within 2 hours of the incident or of its detection by Woodside
- provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator and the department of the responsible State Minister (DMPE) As soon as practicable after orally reporting the incident
- complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0831 – Reportable Environmental Incident (Appendix E) which must be submitted to NOPSEMA as soon as possible (ASAP), but within 3 days of the incident or of its detection by Woodside
- provide a copy of the written report to the National Offshore Petroleum Titles Administrator (NOPTA) and DMPE, within 7 days of the written report being provided to NOPSEMA.

AMSA will be notified of oil spill incidents ASAP after their occurrence, and DCCEEW notified if MNES are to be affected by the oil spill incident.

In the unlikely event of a spill, Woodside must notify appropriate cultural authorities that may be affected; with the purpose of mitigating potential risks to cultural heritage values in accordance with the Oil Pollution First Strike Plan (See Appendix H).

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7.13.4.2 Recordable incidents

A recordable incident as defined under Regulation 5 of the Environment Regulations is an incident arising from the activity that 'breaches an EPO or EPS, in the EP that applies to the activity, that is not a reportable incident'.

Any breach of the EPOs or EPSs (as presented within Section 6) will be raised as a recordable incident and managed as per the notification and reporting requirements outlined below and internal requirements outlined in Section 7.13.

7.13.4.2.1 Notification

NOPSEMA will be notified of all recordable incidents, according to the requirements of Regulation 50(4), no later than 15 days after the end of the calendar month using the NOPSEMA Form – Recordable Environmental Incident Monthly Summary Report (Appendix E), detailing:

- all recordable incidents that occurred during the calendar month
- all material facts and circumstances concerning the recordable incidents that the operator knows or is able, by reasonable search or enquiry, to find out
- any action taken to avoid or mitigate any adverse environment impacts of the recordable incidents
- the corrective action that has been taken, or is proposed to be taken, to prevent similar recordable incidents
- the action that has been taken, or is proposed to be taken, to prevent a similar incident occurring.

7.13.4.3 Other external incident reporting requirements

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, Table 7-13 describes the incident reporting requirements that also apply to the Petroleum Activity if a spill original from a vessel.

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Table 7-13: External incident reporting requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Any marine incidents during the Petroleum Activity	Vessel Master	AMSA	Incident Alert Form 18 as soon as reasonably practicable Within 72 hours after becoming aware of the incident, submit Incident Report Form 19	AMSA	reports@amsa.gov.au
Oil pollution incidents in Commonwealth waters	Vessel Master	AMSA JRCC	As per Article 8 and Protocol I of MARPOL within 2 hours via the national emergency 24-hour notification contacts and a written report within 24 hours of the request by AMSA	AMSA JRCC	If the ship is at sea, reports are to be made to: Free call: 1800 641 792 Phone: 08 9430 2100 (Fremantle)
Oil pollution incidents in Commonwealth waters	Vessel Master	AMSA	Without delay as per the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth), part II, section 11(1), AMSA JRCC notified verbally via the national emergency 24-hour notification contact of the hydrocarbon spill; follow up with a written Pollution Report ASAP after verbal notification	AMSA JRCC	Phone: 1800 641 792 OR +61 2 6230 6811
Any oil pollution incident which has the potential to enter a National Park or requires oil spill response activities to be conducted within a National Park	Vessel Master	DCCEEW	Reported verbally, ASAP	DNP	Phone: +61 419 293 465
Activity that causes unintentional death of or injury to fauna species listed as Threatened or Migratory under the EPBC Act	Vessel Master	DCCEEW	Within 7 days of becoming aware	Secretary of the DCCEEW	Phone: 1800 803 772 Email: protected.species@environment.gov.au
Within 2 hours of becoming aware of a marine oil pollution	Corporate Incident Management	Department of Transport and Major	Verbally notify DTMI's Maritime Environmental Emergency Response Unit (DTMI MEER) Duty Officer that a spill has	DTMI MEER Duty Officer	Phone: 08 9480 9924

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Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
incident (MOP) that occurs in or may impact state waters	Team (CIMT IC) or delegate	Infrastructure (DTMI)	occurred and, if required, request use of equipment stored in Karratha. Follow up with a written pollution reports as soon as practicable following verbal notification. Additionally, DTMI to be notified if spill is likely to extend into WA State waters. Request DTMI to provide Liaison to Woodside Incident Management Team (IMT).		

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7.14 Emergency preparedness and response

7.14.1 Overview

Under Regulation 22(8), the implementation strategy must contain an oil pollution emergency plan (OPEP) and provide for the updating of the OPEP. Regulation 22(9) outlines the requirements for the OPEP which must include adequate arrangements for responding to and monitoring of oil pollution.

Table 7-14 summarises how this EP and supporting documents address the various requirements of Environment Regulations relating to oil pollution response arrangements.

Table 7-14: Oil pollution preparedness and response overview

Content	Environment Regulations reference	Document/section reference
Details (oil pollution response) control measures that will be used to reduce the impacts and risks of the activity to ALARP and an acceptable level	Regulation 21 (5), 21(6), 22 (2)	Oil Spill Preparedness and Response Mitigation Assessment (Appendix G)
Describes the oil pollution emergency plan	Regulation 22(8)	Woodside's oil pollution emergency plan has the following components: Hydrocarbon Spill Australia Regulatory Framework[93] Oil Pollution First Strike Plan (Appendix H) Oil Spill Preparedness and Response Mitigation Assessment (Appendix G).
Details the arrangements for responding to and monitoring oil pollution (to inform response activities), including control measures	Regulation 22(9)	Oil Spill Preparedness and Response Mitigation Assessment (Appendix G). Oil Pollution First Strike Plan (Appendix H).
Details the arrangements for updating and testing the oil pollution response arrangements	Regulation 22(8), 22(12), 22(13), 22(14)	EP: Section 7.14.8 Oil Spill Preparedness and Response Mitigation Assessment (Appendix G).
Details provisions for monitoring impacts to the environment from oil pollution and response activities	Regulation 22(10)	Oil Spill Preparedness and Response Mitigation Assessment (Appendix G).
Demonstrates that response arrangements in the oil pollution emergency plan are consistent with the national system for oil pollution preparedness and response	Regulation 22(11)	Hydrocarbon Spill Australia Regulatory Framework

7.14.2 Emergency response training

Regulation 22(4) requires that the implementation strategy includes measures to ensure that employees and contractors have the appropriate competencies and training. Woodside has conducted a risk-based training needs analysis on positions required for effective oil spill response.

Following the mapping of training to Woodside identified competencies, training was then mapped to positions based on their required competencies (Table 7-15).

Table 7-15: Emergency response training requirements

IMT position	Minimum competency
Corporate Incident Management Team (CIMT) Incident Commander and Deputy Incident Commander	• IMT Fundamentals Course (internal course) or equivalent • ICS 100/200

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IMT position	Minimum competency
	• IMO3 or equivalent spill response specialist level with an oil spill response organisation (OSRO) • Participation in L2 activation, exercise or skills maintenance
Operations, Planning, Logistics and Finance Sections, and other rostered members of the CIMT	• IMT Fundamentals Course or equivalent • ICS 100/200 • Oil spill theory • Participation in L2 activation, exercise or skills maintenance
Environment Unit Leader	• IMT Fundamentals Course • ICS 100/200 • IMO2 or equivalent spill response specialist level with an OSRO • Participation in L2 activation, exercise or skills maintenance
Note on competency/equivalency	
In 2023 Woodside undertook a review of incident and crisis systems, processes and tools to assess whether these were fit-for purpose and has rolled out a change to the Crisis and Emergency Management training and the oil spill response training requirements for IMT roles. The revised IMT Fundamentals training Program aligns with the performance requirements of the PMAOMIR320 – Manage Incident Response Information and PMAOM0R418 - Coordinate Incident Response. In 2023, Woodside took the decision to align its global incident command arrangements to the Incident Command System (ICS). As such, all rostered members of the Incident Management Team are trained up to ICS 200. In addition to baseline incident management training, all rostered members of the CIMT undertake a level of hydrocarbon spill response training. Depending upon the role, this may take the form of IMO training or completion of Woodside's internal oil spill training course (OSREC) which involves the completion of two online AMSA Modules (Introduction to National Plan and Incident Management; and Introduction to Oil Spills) and face-to-face training. Woodside Learning Services is responsible for collating and maintaining personnel training records. The HSP Dashboard reflects the competencies required for each oil spill role (IMT/operational).	

7.14.3 Emergency response preparation

The Emergency Operations Centre, based in Woodside's head office, is the onshore coordination point for an offshore emergency, and the location for the Corporate Incident Management Team (CIMT) during an incident. The CIMT is staffed by an appropriately skilled team available on call 24 hours a day. This team coordinates rescues, minimises damage to the environment and facilities, and liaises with external agencies. Woodside's Incident Command Structure is included in the Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan (Appendix H) and response arrangements are further detailed in the Hydrocarbon Spill Australia Regulatory Framework[93]. Roles and responsibilities for emergency response are detailed in the Woodside Incident Management Handbook.

Woodside will have an Emergency Response Plan (ERP) in place relevant to the Petroleum Activity. The ERP provides procedural guidance specific to the asset and location of operations to control, coordinate and respond to an emergency or incident. The ERP will contain instructions for vessel emergency, medical emergency, search and rescue, reportable incidents, incident notification, contact information and activation of the contractor's emergency centre and Woodside Communication Centre.

In addition, the Emergency Preparedness MSPS (M06) is in place to assure thatin the event of an incident, the organisation is appropriately prepared for all necessary actions which may be required for the protection of People, Environment, Asset, Reputation and Livelihood.

7.14.4 Initial response to a facility incident

The facility is equipped with emergency shutdown (ESD) systems designed to protect personnel, the facility and the environment from unsafe operating conditions and catastrophic situations.

ESD systems are provided as a means of isolation in response to process upsets and facility conditions (including associated flowlines and risers) that could result in loss of hydrocarbon inventories, or to reduce the potential impact from a hydrocarbon loss of containment event on the facility. Provision has been made

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for process and facility alarm systems to provide early indication of any process upset conditions and potential hazardous events, including fire and gas alarms.

The key ERP relevant to the facility and subsea infrastructure is the Goodwyn Alpha ERP. This plan covers health, safety, asset and environmental risks (including fire, structural integrity, sabotage, etc) to ensure the range of occupational, asset and environmental risk exposures from incidents have been considered and plans are in place for their management. The plan provides specific details on the initial response required during events with potential significant environmental consequences such as a hydrocarbon spill, subsea hydrocarbon leak or potential collision.

7.14.5 Oil and other hazardous materials spill

A significant hydrocarbon spill during the Petroleum Activity is unlikely, but should such an event occur, it has the potential to cause serious environmental and reputational damage if not managed properly. The Hydrocarbon Spill Australia Regulatory Framework[93] document, supported by the Goodwyn Alpha (GWA) Facility Operations – Oil Pollution First Strike Plan which provides tactical response guidance to the activity/area (Appendix H), cover spill response for this Petroleum Activity.

The Hydrocarbon Spill Preparedness Team manages Woodside's hydrocarbon spill response equipment stockpile. Woodside also maintains a suite of contracts for access to additional specialist response equipment and trained personnel as required via Australian and international spill response organisations and labour supply companies. In the event of a major spill, Woodside will enact first strike response actions, in liaison with the relevant Control Agency, as detailed in the GWA Facility Operations – Oil Pollution First Strike Plan (Appendix H). This Plan provides immediate actions required to begin a response.

Support vessels will have shipboard oil pollution emergency plans (SOPEPs) in accordance with the requirements of MARPOL 73/78 Annex I. These plans outline responsibilities, specify procedures and identify resources available in the event of a hydrocarbon or chemical spill from vessel activities. The Petroleum Activity's Oil Pollution First Strike Plan (Appendix H) is intended to work in conjunction with the SOPEPs, if hydrocarbons are released to the marine environment from a vessel.

Woodside has established EPOs, EPSs and MCs to be used for hydrocarbon spill response during the Petroleum Activity, as detailed in Appendix G.

7.14.6 Emergency and spill response

Woodside categorises incidents in relation to response requirements:

- **Level 1** incidents are those that can be resolved using existing resources, equipment and personnel. A Level 1 incident is contained, controlled and resolved by site- or regionally based teams using existing resources and functional support services.
- **Level 2** incidents are characterised by a response that requires external operational support to manage the incident. It is triggered if the capabilities of the tactical level response are exceeded. This support is provided to the activity by activating all or part of the responsible CIMT.
- **Level 3** incident or crisis is identified as a critical event that seriously threatens the organisation's people, the environment, company assets, reputation, or livelihood. At Woodside, the Crisis Management Team manages the strategic impacts in order to respond to and recover from the threat to the company (material impacts, litigation, legal and commercial, reputation and such). The CIMT may also be activated as required to manage the operational incident response.

7.14.7 Emergency and spill response drills and exercises

Woodside's capability to respond to incidents will be tested periodically, in accordance with the Emergency and Crisis Management Procedure. The scope, frequency and objective of these tests is described in Table 7-16. Emergency response testing is aligned to existing or developing risks associated with Woodside's operations and activities. Corporate hazards and risks outlined in the corporate risk register, respective Safety Cases or project Risk Registers, are reference points for developing and scheduling emergency and crisis management exercises. External participants may be invited to attend exercises (for example, government agencies, specialist service providers, oil spill response organisations, or industry members with which Woodside has mutual aid arrangements).

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The overall objective of exercises is to test procedures, skills and the teamwork of the Emergency Response and Command Teams in their ability to respond to major accident and major environment events. After each exercise, the team holds a debriefing session, during which the exercise is reviewed. Any lessons learned or areas for improvement are identified and incorporated into revised procedures, where appropriate.

Table 7-16: Testing of response capability

Response category	Scope	Response testing frequency	Response testing objective
Level 1 Response	Exercises are project-/ activity-specific	Two Level 1 'First Strike' drills conducted per year, per asset. Additional Level 1 emergency drills routinely conducted (approximately one per fortnight).	Drills test elements of the Oil Pollution First Strike Plan (Appendix H) Emergency drills are scheduled to test other aspects of the Emergency Response Plan.
Level 2 Response	Exercises are facility-specific	A minimum of one Emergency Management exercise is conducted biennially.	Testing both the facility IMT response and/or that of the CIMT following handover of incident control.
Level 3 Response	Exercises are relevant to all Woodside assets	The number of CMT exercises conducted each year is determined by the Chief Executive Officer, in consultation with the Vice President of Security and Emergency Management.	Test Woodside's ability to respond to and manage a crisis level incident.

7.14.8 Testing of hydrocarbon spill response arrangements

Woodside is required to test hydrocarbon spill response arrangements as per Regulations 22(12), 22(13) and 22(14) in the Environment Regulations. Woodside's arrangements for spill response are common across Australian operating assets and activities to ensure controls are consistent. The overall objective of testing these arrangements is to ensure that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to:

- ensure relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities
- test response arrangements and actions to validate response plans
- ensure lessons learned are incorporated into Woodside processes and procedures and improvements made where required.

If new response arrangements are introduced, or existing arrangements significantly amended, additional testing is undertaken accordingly. Additional activities or activity locations are not anticipated to occur; however, if they do, testing of relevant response arrangements will be undertaken as soon as practicable.

In addition to the testing of response capability described in Table 7-16, up to eight formal exercises are planned annually, pan-Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

7.14.9 Testing of arrangements schedule

Woodside's Testing of Arrangements Schedule (Figure 7-9-) aligns with international good practice for spill preparedness and response management; the testing is compatible with the International Petroleum Industry Environmental Conservation Association (IPIECA) Good Practice Guide and the Australian Institute for Disaster Resilience Australian Emergency Management Arrangements Handbook. If a spill occurs, enacting these arrangements will underpin Woodside's ability to implement a response across its petroleum activities.

The hydrocarbon spill arrangements shown in the rows of the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g. capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel capability for conducting operational monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

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The vertical columns relate to how hydrocarbon spill arrangements will be tested over the 3-year rolling schedule. The subheading for the column describes the standard method of testing likely to be undertaken (e.g. discussion exercise, desktop exercise), and the green cells indicate the arrangements that could be tested for each method.

Some arrangements may be tested across multiple exercises (e.g. critical arrangements) or via other 'additional assurance' methods outside the formal Testing of Arrangements Schedule that also constitute sufficient evidence of testing of arrangements (e.g. audits, no-notice drills, internal exercises, assurance drills).

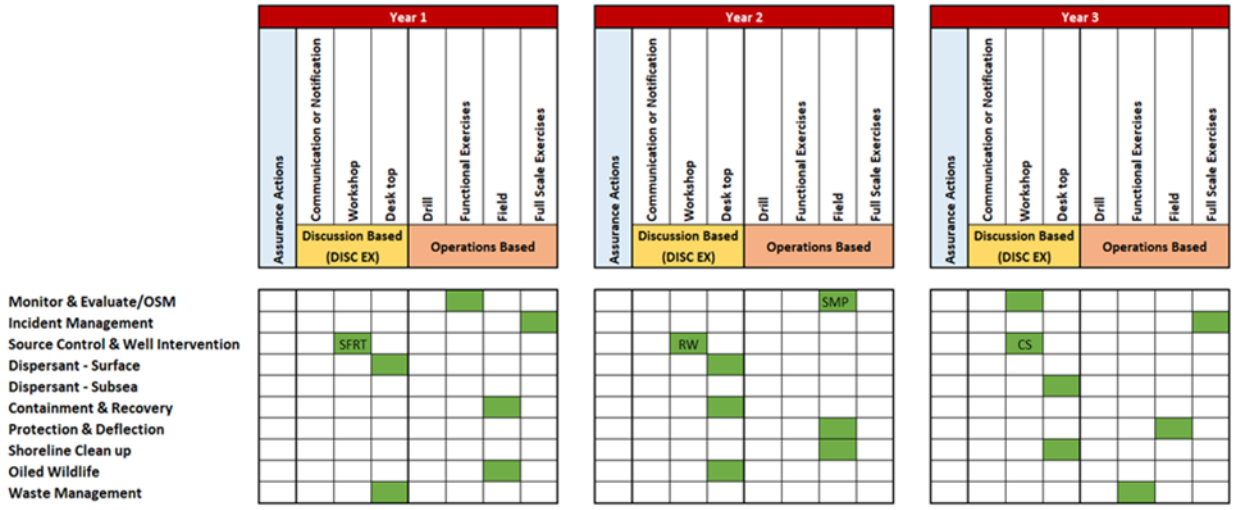


Figure 7-9-: Indicative 3-yearly testing of arrangements schedule

Note: Schedule is subject to change, additional detail is included in live document

7.14.10 Cyclone and dangerous weather preparation

Tropical cyclones and other severe weather events are a potential risk to the safety and health of personnel and can potentially cause spills of hazardous materials into the environment from infrastructure and/or damaged vessels.

Facilities and relevant support vessels on hire to Woodside receive regular forecasts from Woodside Meteorologists, who liaise closely with the Bureau of Meteorology (BOM). If a cyclone (or severe weather event) is forecast, the path and its development is plotted and monitored using the BOM data. If there is the potential for the cyclone (severe weather event) to affect the Petroleum Activity the asset Cyclone Contingency Plan and the vessel's Cyclone Contingency Plan will be actioned. If required, vessels can transit from the proposed track of the cyclone (severe weather event).

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9. LIST OF TERMS AND ACRONYMS

Table 9-1: List of terms and definitions

Term	Definition
2TL	Second Trunkline
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ACN	Australian Company Number
AEMO	Australian Energy Market Operator
AEP	Australian Energy Producers
AER	Auxiliary Equipment Room
AFC	Antifouling Coating
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AH	Aboriginal Heritage
AHO	Australian Hydrographic Office
AHT	Anchor Handling Tug
AIMS	Australian Institute of Marine Science
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZG	Australia and New Zealand Guideline
APS	Announced Pledges Scenario
AQMP	Air Quality Management Plan
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
AS	Australian Standard
ASAP	As soon as possible
ASV	Accommodation Support Vessel
ATSIHP	Aboriginal and Torres Strait Islander Heritage Protection
AUV	Autonomous Underwater Vehicle
AW	Abandoned Wells
BCF	Bioconcentration Factor
BDV	Blow-Down Valve
BESS	Battery Energy Storage System
BIA	Biologically Important Area
BOM	Bureau of Meteorology
BOP	Blow-Out Preventer
BRAMMC	Burrup Rock Art Monitoring Management Committee
BRATWG	Burrup Rock Art Technical Working Group

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Term	Definition
BTAC	Buurabalayji Thalanyji Aboriginal Corporation
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
BWCMP	Conservation Management Plan for the Blue Whale
CAES	Catch and Effort System
CAMBA	Agreement Between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment
CAPEX	Capital Expenditure
CATAMI	Collaborative and Automated Tools for the Analysis of Marine Imagery
CCE	Common Cause Event
CCR	Central Control Room
CCS	Carbon Capture and Storage
CDOM	Coloured Dissolved Organic Matter
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFA	Commonwealth Fisheries Association
CFU	Compact Flotation Unit
CHMP	Cultural Heritage Management Plan
CHP	Commonwealth Heritage Places
CIMT	Corporate Incident Management Team
CIP	Clean-in-Place
CMMS	Computerised Maintenance Management System
CMP	Closure Management Plans
CMT	Crisis Management Team
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea 1972
COP	Conference of Parties
CS	Cost/Sacrifice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTD	Conductivity, Temperature and Depth
CV	Company Values
CVS	Contractor Verification Service
CY	Calendar Year
DAA	Data Analysis Australia
DAFF	Department of Agriculture, Fisheries and Forestry
DCCEEW	Commonwealth Department of Climate Change, Energy, Environment and Water
DCS	Distributed Control System
DEHP	Di (2-ethylhexyl) phthalate
DGV	Default Guideline Value
DLN	Dry Low NOx

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Term	Definition
DMPE	Western Australian Department of Mines, Petroleum and Exploration
DNP	Director of National Parks
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DP	Dynamic Positioning
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DTMI	Western Australian Department of Transport and Major Infrastructure
DWER	Department of Water and Environmental Regulation
DWT	Dead Weight Tonnage
ECAR	Environmental Compliance Action Register
EDU	Electrical Distribution Unit
EET	Emission Estimation Techniques
EEZ	Exclusive Economic Zone
EFL	Electrical Flying Lead
EHU	Electro-Hydraulic Umbilical
EMBA	Environment that May be Affected
EMS	Environmental Management System
ENVID	Environment Identification
EOC	Emergency Operations Centre
EOFL	End of Field Life
EP	Environment Plan
EPA	Environmental Protection Authority
EPBC	Environment Protection and Biodiversity Conservation Act 1999
EPO	Environmental Performance Outcome
EPS	Environmental Performance Standards
EQC	Environmental Quality Criteria
EQMF	Environment Quality Management Framework
EQS	Environmental Quality Criteria
ER	Emergency Response
ERD	Environmental Review Document
ERM	Environmental Resource Management
ERP	Emergency Response Plan
ESD	Emergency Shutdown
ESD	Ecologically Sustainable Development
ETA	Exploration Temporarily Abandoned
EY	Echo Yodel
F	Feasibility
FCAFC	Federal Circuit and Family Court of Australia.

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Term	Definition
FDOM	Fluorescent Dissolved Organic Matter
FID	Final investment decision
FLNG	Floating Liquefied Natural Gas
FPSO	Floating Production, Storage and Offloading
FSP	First Strike Plan
FY	Financial Year
GDP	Gross Domestic Profit
GHG	Greenhouse Gas
GIS	Geographic Information System
GL	Gigaliter
GP	Good Industry Practice
GPG	Gas Powered Generation
GTG	Gas Turbine-Driven Generator
GWA	Goodwyn Alpha
GWF	Greater Western Flank
H2S	Hydrogen Sulphide
HAT	Highest Astronomical Tide
HAZID	Hazard Identification
HCTS	Habitat Critical to the Survival
HF	High Frequency
HFL	Hydraulic Flying Lead
HLV	Heavy Lift Vessel / Installation Vessel
HMS	His / Her Majesty's Ship
HOCNF	Harmonised Offshore Chemical Notification Format
HP	High Pressure
HQ	Hazard Quotient
HSE	Health, Safety and Environment
HSEC	Health, Safety, Environmental and Community
HSEQ	Health, Safety, Environment and Quality
HVAC	Heating Ventilation and Air Conditioning System
HWU	Hydraulic Workover Unit
IA	Indo-Australian
IAP	Incident Action Plan
IC	Incident Commander
ICLDP	Incident and Crisis Leadership Development Program
ICOMOS	International Council on Monuments and Sites
ICS	Incident Command System
ID	Identity / identification
IEA	International Energy Agency

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Term	Definition
IFL	Interfield Line
ILUA	Indigenous Land Use Agreements
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMMR	Inspection, Maintenance, Monitoring and Repair
IMO	International Maritime Organisation
IMS	Invasive Marine Species
IMSMA	Invasive Marine Species Management Area
IMSMP	Invasive Marine Species Management Plan
IMT	Incident Management Team
IOGP	International association of Oil and Gas Producers
IPCC	Intergovernmental Panel on Climate Change
IPIECA	International Petroleum Industry Environmental Conservation Association
ISO	International Organization for Standardization
ISQG	Interim Sediment Quality Guideline
ITOPF	International Tank Owners Pollution Federation
IUCN	International Union for Conservation of Nature
JAMBA	Japan-Australia Migratory Bird Agreement
JASCO	Jasco Applied Sciences
JRCC	Joint Rescue Coordination Centre
KEF	Key Ecological Feature
KGP	Karratha Gas Plant
KO	Knock Out
KPI	Key Performance Indicator
LAT	Lowest Astronomical Tide
LBL	Long baseline
LCS	Legislation, Codes and Standards
LF	Low Frequency
LLPC	Low-Low-Pressure Compressor
LLPO	Low-Low-Pressure Operations
LNG	Liquefied Natural Gas
LOA	Length Overall
LOR	Limit of Reporting
LOT	Leak-off Testing
LP	Low Pressure
LPG	Liquefied Petroleum Gas
LSS	Load Shedding System
LTO	Licence to Operate
MAC	Murujuga Aboriginal Corporation
MAE	Major Accident Events

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Term	Definition
MAH	Monocyclic Aromatic Hydrocarbons
MARPOL	The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (also known as MARPOL 73/78)
MASTREP	Modernised Australian Ship Tracking and Reporting System
MBES	Multibeam Sonar
MC	Measurement Criteria
MCL	Murujuga Cultural Landscape
MCS	Master Control Station
MEE	Major Environmental Events
MEER	Maritime Environmental Emergency Response Unit
MEG	Monoethylene Glycol
METL	Maintenance Engineering Team Leader
MFO	Marine Fauna Observer
MGP	Methane Guiding Principles
MLP	ASEAN Methane Leadership Program
MMA	Marine Management Area
MNES	Matters of National Environmental Significance
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MOP	Marine Oil Pollution
MOPO	Manual of Permitted Operations
MP	Monopile
MRAMP	Murujuga Rock Art Monitoring Program
MRAS	Murujuga Rock Art Strategy
MS	Management System
MSPS	Management System Performance Standard
MW	Megawatts
N/A	Not Applicable
N2	Nitrogen
N2O	Nitrous Oxide
NAC	Nanda Aboriginal Corporation
NAH	Monocyclic Aromatic Hydrocarbon
NATA	National Association of Testing Authorities
NDC	Nationally Determined Contributions
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NGAF	National Greenhouse Accounts Factors
NGER	National Greenhouse and Energy Reporting
NGERS	National Greenhouse and Energy Reporting Scheme

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Term	Definition
NIMS	Non-indigenous Marine Species
NM	Nautical Miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NORM	Naturally Occurring Radioactive Material
NOX	Nitrous Oxides
NPI	National Pollution Inventory
NRC	North Rankin Complex
NT	Northern Territory
NTD	Native Title Determination
NW	North-West
NWS	North West Shelf
NWSTF	North West Slope Trawl Fishery
NZ	New Zealand
NZE	Net Zero Emissions
O3	Ozone
OA	Operational Area
OCNS	Offshore Chemical Notification Scheme
OCS	Offshore Constitutional Settlement
ODS	Ozone-Depleting Substances
OEUK	UK Offshore Energies
OGCI	Oil and Gas Climate Initiative
OGUK	Oil and Gas UK (O&G UK)
OIM	Offshore Installation Manager
OIW	Oil-In-Water
OMDAMP	Offshore Marine Discharge Adaptive Management Plan
OPAM	Operator Proactive Monitoring
OPEP	Oil Pollution Emergency Plan
OPEX	Operating Expense
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPP	Offshore Project Proposal
OPRC	Oil Pollution Preparedness, Response and Cooperation
OSM	Operational and Scientific Monitoring
OSPAR	Oslo/Paris convention (for the Protection of the Marine Environment of the North-East Atlantic)
OSPRMA	Oil Spill Preparedness and Response Mitigation Assessment
OSREC	Oil Spill Response Skills Enhancement Course

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Term	Definition
OSRO	Oil Spill Response Organisation
OSV	Offshore Support Vessel
OUV	Outstanding Universal Values
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Management System Assessment
OWDS	Oily Water Drains Separator
P&A	Plug and Abandon
PAH	Polycyclic Aromatic Hydrocarbons
PBC	Prescribed Body Corporate
PDSF	Pilbara Demersal Scalefish Fishery
PEC	Predicted Effect Concentration
PFTIMF	Pilbara Fish Trawl (Interim) Managed Fishery
PHD	Process Historian Database
PJ	Professional Judgement
PK	Peak Pressure
PLET	Pipeline End Termination
PLF	Pilbara Line Fishery
PLONOR	Pose Little or No-risk
PM	Particulate Matter
PMST	Protected Matters Search Tool
PNEC	Predicted No-effect Concentration
PoB	Personnel Onboard
POOMP	Production Optimisation and Opportunity Management Procedure
PPE	Personal Protective Equipment
PRT	Proportioning Rate Test
PS	Performance Standard
PSD	Production Shutdown
PSM	Process Safety Management
PSRA	Process Safety Risk Assessment
PSV	Pressure Safety Valves
PSZ	Petroleum Safety Zone
PTMF	Pilbara Trap Managed Fishery
PTS	Permanent Threshold Shift
PW	Produced Water
QA/QC	Quality Assurance, Quality Control
RAP	Reconciliation Action Plan
RATSIB	Representative Aboriginal/Torres Strait Islander Body
RBA	Risk-Based Analysis
RBI	Risk-Based Inspection

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Term	Definition
RCC	Regional Coordination Centre
RESDV	Riser Emergency Shutdown Valve
RFSU	Ready for Start-Up
RO	Reverse Osmosis
ROC	Remote Operation Centre
ROV	Remotely Operated Vehicle
SAP-PM	Woodside's CMMS
SBP	Sub Bottom Profiling
SBTF	Southern Bluefin Tuna Fishery
SCE	Safety and Environment Critical Element
SCM	Subsea Control Modules
SCQ	Safety and Environment Critical Equipment
SCR	Selective Catalytic Reduction
SCV	Subsea Construction Vessel
SDU	Subsea Distribution Units
SEL_{24}	Sound Exposure Level (24 hour)
SEZ	Safety Exclusion Zone
SGM	Safeguard Mechanism
SIMAP	Spill Impact Mapping Analysis Program
SMPEP	Shipboard Marine Pollution Emergency Plan
SOLAS	Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SPL	Sound Pressure Level
SSIV	Sub-sea Isolation Valve
SSS	Side Scan Sonar
SSSV	Sub Surface Safety Valve
STEPS	Stated Policies Scenario
STP	Sewage Treatment Plant
SV	Societal Value
SVOC	Semi-volatile Organic Chemical
SW	Southwest
SWIS	Southwest Integrated System
SWMR	South West Marine Region
TANPF	Technical Ammonium Nitrate Production Facility
TAP	Threat Abatement Plan
TCFD	Task Force on Climate-related Financial Disclosure
TDS	Total Dissolved Solids
TEG	Triethylene Glycol

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Term	Definition
The Regulations	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbon
TRH	Total Recoverable Hydrocarbons
TSS	Total Suspended Solid
TSSC	Threatened Species Scientific Committee
TTS	Temporary Threshold Shift
UCH	Underwater Cultural Heritage
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea 1982
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCC	United Nations Framework Convention on Climate Change
UPS	Uninterruptable Power Supply
USBL	Ultra-short Baseline
USEPA	U.S. Environmental Protection Agency
USV	Uncrewed Surface Vessels
UTA	Umbilical Termination Assemblies
UTB	Umbilical Termination Baskets
VHF	Very High Frequency
VOC	Volatile Organic Compounds
WA	Western Australia
WAFIC	Western Australian fishing industry council
WALGA	WA Local Government Association
WDTF	Western Deepwater Trawl Fishery
WEL	Woodside Energy Limited
WET	Whole Effluent Testing
WGR	Water-Gas Ratio
WHP	Wellhead Platform
WLS	Woodside Learning System
WMS	Woodside Management System
WOMP	Well Operations Management Plan
WSF	Western Skipjack Fishery
WTBF	Western Tuna and Billfish Fishery
XT	Christmas Tree Wellhead

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APPENDIX A WOODSIDE ENVIRONMENT AND BIODIVERSITY, CLIMATE AND RISK MANAGEMENT POLICIES

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Environment and Biodiversity Policy

OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision-making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new activities[1] within the boundaries of natural sites on the UNESCO World Heritage List.[2]
- Not undertaking new activities within IUCN Protected Areas[3] unless compatible with management plans in place for the area.
- Achieving net zero deforestation[4] for new activities.
- Developing Biodiversity Management Plans for all new major projects (CAPEX >US$2 billion).
- Supporting positive biodiversity outcomes in regions and areas in which we undertake activities.
- Setting targets and publicly reporting on our environmental and biodiversity performance.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2025.

[1] Does not include non-industrial and existing activities that are compatible with maintenance of the listed outstanding universal values.

[2] New UNESCO World Heritage Listings that overlap existing activities will be assessed at the time of listing.

[3] New IUCN Protected Areas that overlap existing activities will be assessed at the time of listing.

[4] Definition of Forest: 'native trees higher than 5 metres and a canopy cover of more than 10 percent on the land to be cleared'.

Climate Policy

BACKGROUND

The Intergovernmental Panel on Climate Change has stated that “it is unequivocal that human influence has warmed the atmosphere, ocean and land”. An objective of the Paris Agreement is to hold “the increase in the global average temperature to well below 2ºC above pre-industrial levels” and to pursue “efforts to limit the temperature increase to 1.5ºC”. Many countries have set targets to reduce greenhouse gas emissions, including by changing the way they produce and consume energy.

OBJECTIVE

Woodside’s objective is to thrive in this energy transition as a low cost, lower carbon energy provider.

PRINCIPLES

Woodside aims to achieve the objective by:

- Setting science-based[1] near, mid, and long-term net emissions reduction targets that are consistent with Paris-aligned[2] scenarios, covering equity scope 1 and 2 emissions, both operated and non-operated.[3]
- Developing and operating oil and gas projects in a manner that is consistent with these targets. This includes the deployment of lower-emission technologies (Design Out), supporting efficient operations (Operate Out) and use of robust offsets (Offset) as methods to reduce and offset greenhouse gas emissions.
- Investing in new energy products and lower carbon services to reduce customers’ emissions (part of Woodside’s Scope 3 emissions), including but not limited to hydrogen, ammonia and carbon capture, utilisation and storage.
- Publishing transparent climate-related disclosures aligned to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) or other recognised global reporting standards.
- Aligning our advocacy to the principles of this Climate Policy.

[1] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of “science-based” (published 2021) which states “targets are considered ‘science-based’ if they are in line with what the most recent climate science sets out is necessary to meet the goals of the Paris Agreement—limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius.”. See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related-disclosures- prototype.pdf (Appendix A).

[2] Woodside is using the draft Prototype IFRS Sustainability Disclosure Standard definition of “Paris-aligned scenarios” (published 2021) which states “scenarios consistent with limiting global warming to below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit warming to 1.5 degrees Celsius.” See https://www.ifrs.org/content/dam/ifrs/groups/trwg/trwg-climate-related-disclosures- prototype.pdf (Appendix A).

[3] Equity emissions means the share of the total emissions arising from an activity that are attributable to Woodside in proportion to Woodside’s ownership interest in the activity, irrespective of whether Woodside operates the activity. Operated emissions are the total emissions arising from an activity that Woodside operates, irrespective of Woodside’s ownership interest.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venture participants engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2025.

Risk Management Policy

OBJECTIVES

Woodside recognises that risk is inherent in our business and that effective risk management supports delivery of our strategic objectives. We are committed to managing risks proactively and effectively to protect and create value.

Our risk management framework outlines how we prioritise risk management and governance. We maintain oversight of our enterprise risk exposure, seek to protect ourselves from potential negative impacts and improve our resilience against emerging risks.

Our approach enables a risk-aware culture where everyone at Woodside is responsible for proactively identifying, assessing and treating risks that relate to the objectives they are accountable for delivering.

PRINCIPLES

Woodside achieves these objectives by:

- Demonstrating leadership and commitment to aligning and integrating the risk management framework with our values, strategy, culture, behaviours, business activities and governance practices.
- Understanding the type and amount of risk we take and accept to inform our decision making and acting with due regard to the risk appetite endorsed by the Board.
- Allocating competent resources to own and assure risk and controls.
- Applying a structured and comprehensive approach to identifying, assessing and treating current risks and responding to strategic and emerging risks.
- Maintaining a robust and proportionate level of internal control.
- Analysing insights from trends and developments in the external environment and stakeholder engagement.
- Evaluating and improving the effectiveness and efficiency of our approach.

APPLICABILITY

The Managing Director of Woodside is accountable to the Board of Directors for ensuring this Policy is effectively implemented.

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2025.

APPENDIX B RELEVANT REQUIREMENTS

The below table refers to Commonwealth legislation related to the Petroleum Activity.

Commonwealth legislation	Summary	Relevant to the activity	EP Section
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	This Act seeks "to preserve and protect places, areas and objects of particular significance" to Aboriginal people. Under the Section 9 and 10 provisions of the Act, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12. Under Section 22 of the Act, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20.	Yes – There are known areas, features and values within the Operational Area relevant to Indigenous heritage as described throughout Section 4.9.	Section 6.11 (Indigenous cultural features and heritage values assessment)
Air Navigation Act 1920 Air Navigation Regulations 2026 Air Navigation (Aircraft Engine Emissions) Regulations 1995 Air Navigation (Aircraft Noise) Regulations 2018	This Act relates to managing air navigation and safety.	Yes – The Act and associated Regulations apply to helicopter movements that may be required during the Petroleum Activity.	Section 6.7.1 (Physical presence: interaction with other marine users)
Australian Heritage Council Act 2003	This Act establishes the Australian Heritage Council and supports the administration of Australia's national heritage system, including advice relating to the National Heritage List and Commonwealth Heritage List.	Yes – National and Commonwealth heritage listed places have been identified in the EMBA (see Table 4-23).	Section 4.9.9 (World, National and Commonwealth heritage listed places) Section 6.11 (Indigenous cultural features and heritage values assessment)
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for AMSA, which represents the Australian Government and international forums in the development, implementation and enforcement of international standards, including those governing ship safety	Yes – The Act applies to maritime safety and vessel activities associated with the Petroleum Activity. It is relevant to promote maritime	Section 6.7.1 (Physical presence: interaction with other marine users)

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
	and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters. AMSA is the lead agency for responding to oil spills in the marine environment and is responsible for the Australian National Plan for Maritime Environmental Emergencies.	safety and the protection of the marine environment from vessel pollution. AMSA Response Centre will be notified of activities and movements 24 to 48 hours before the scheduled activity start date and in the event of incidents during the Petroleum Activity (including oil pollution incidents in Commonwealth waters).	Section 6.7.6 (Routine and non-routine discharges: utility systems, drains and support vessels) Section 6.8.7 (Unplanned hydrocarbon release: loss of marine vessel separation) Table 7-13 (External incident reporting requirements)
Australian Radiation Protection and Nuclear Safety Act 1998 *Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Radiation Protection Series (RPS)*	This Act aims to protect the health and safety of people and the environment from the harmful effects of radiation.	Yes – NORMs may be present in PW.	Section 6.7.5 (Routine and non-routine discharges: produced water) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management)
Biosecurity Act 2015 Biosecurity Regulations 2016 Australian Ballast Water Management Requirements	This Act provides the Commonwealth with powers to take quarantine measures, and implement necessary related programs, to prevent introducing any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include entry, seizure, detention and disposal. This Act includes mandatory controls on using seawater as ballast in ships and declaring sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers. The Regulations requires ships to report information about biofouling management and the voyage history of the ship in the past 12 months through a pre arrival report.	Yes – The Act and associated Regulations and Requirements apply to the use of all internationally sourced Petroleum Activity vessels operating in Australian Waters. Controls must be applied to manage the potential for introduction of IMS.	Section 6.9.4 (Physical presence: introduction of invasive marine species)
Climate Change Act 2022	This Act sets out Australia's greenhouse gas emissions reduction targets in a manner consistent with the Paris	Yes - The emissions targets established by this Act are inclusive of offshore petroleum activities.	Sections 6.7.7 and 6.7.8 (Routine and non-routine

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
	Agreement and Australia's Nationally Determined Contribution (NDC). As the Nationally Determined Contribution (NDC) are at the heart of the Paris Agreement, NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.		atmospheric and greenhouse gas emissions)
Environment Protection and Biodiversity Conservation Act 1999 Environment Protection and Biodiversity Conservation Regulations 2025	This Act includes the objective to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places in Australia. These are defined under Part 3 of the Act as 'matters of national environmental significance' (MNES). The Act sets a regime that aims to ensure actions taken on (or impacting upon) Commonwealth land or waters are consistent with the principles of ESD. The Act streamlines the national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and culturally significant places. Where activities have existing approvals under the Act, these will continue to apply.	Yes – This Act applies to all aspects of the Petroleum Activity that have the potential to impact MNES. Where there is the potential for MNES to be impacted, an assessment of impacts must be presented in the EP. Authorisation to undertake the Petroleum Activity will be met through NOPSEMA's decision making processes which includes an assessment of the Petroleum Activities compliance with the relevant regulations and plans under the Act, which are presented throughout this EP.	Section 1.8.2 (Environment Protection and Biodiversity Conservation Act 1999) Section 6.7.2 (Physical presence: disturbance to the seabed) Section 6.7.3 (Routine acoustic emissions) Section 6.7.4, and 6.7.5, 6.7.6 (Routine and non-routine discharges) Section 6.7.9 (Routine light emissions) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7, and 6.8.8 (Unplanned hydrocarbon releases) Section 6.9.1 (Unplanned hydrocarbon or chemical release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management) Section 6.9.3 (Physical presence: interactions with marine fauna)

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
			Section 6.9.4 (Physical presence: introduction of invasive marine species) Section 6.10 (Recovery plan and threat abatement assessment)
Environment Protection (Sea Dumping) Act 1981 Environment Protection (Sea Dumping) Regulations 1983	This Act provides for protecting the environment by regulating dumping of matter into the sea, incineration of waste at sea, and placement of artificial reefs.	No – No dumping, abandonment or placement of infrastructure at sea for the sole purpose of disposal is proposed within the five year scope of the EP. Any future decommissioning activities will be managed under separate EPs and assessed against applicable legislation at the time.	N/A
Fisheries Management Act 1991 Fisheries Management Regulations 2019	This Act provides the legislative framework for the sustainable management and conservation of Commonwealth fisheries within the Australian Fishing Zone. It establishes systems for regulating fishing activities, including licensing and quotas, and confers powers on the Australian Fisheries Management Authority (AFMA) to develop management plans, enforce compliance, and protect fishery resources.	Yes – the Petroleum Activity may interact with Commonwealth-managed fisheries (Section 4.10.1).	Section 6.7.1 (Physical presence: interaction with other marine users) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7, and 6.8.8 (Unplanned hydrocarbon releases)
Hazardous Waste (Regulation of Exports and Imports) Act 1989	This Act establishes a national framework to regulate the export, import and transit of hazardous waste, with the primary objective of ensuring such waste is managed in an environmentally sound manner to protect human health and the environment both within Australia and internationally. The Act also gives effect to Australia's obligations under the Basel Convention, which governs the transboundary movement of hazardous waste.	No – The activity does not involve transboundary movement of hazardous wastes. Any future decommissioning activities involving the transboundary movement of hazardous waste will be assessed under separate EPs and against the legislation in force at that time.	N/A
Industrial Chemicals Environmental Management (Register) Act 2021 Industrial Chemicals Environmental Management (Register) Instrument 2022	The Act is the legislative framework for the Industrial Chemicals Environmental Management Standard (IChEMS), a scheme to implement a nationally consistent approach to the management of risks to the environment resulting from the use of industrial chemicals, including those by the oil and gas industry.	Yes – Hydrocarbons and chemicals may be discharged during routine and non-routine operations and activities. Woodside's Environment Chemical Selection and Assessment Guideline includes the requirements set out by the Australian	Sections 6.7.4, 6.7.5 and 6.7.6 (Routine and non-routine discharges) Sections 6.9.1 and 6.9.2 (Unplanned discharges)

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
	The Instrument supports the Act to create consistent, national, and enforceable standards for environmental risk management of industrial chemicals.	Government under IChEMS (refer to Section 7.2.3).	Section 7.2.3 (Selection, assessment and approval of chemicals)
National Environment Protection Measures (Implementation) Act 1998 National Environment Protection Measures (Implementation) Regulations 1999 National Environment Protection (National Pollutant Inventory) Measure 1998	This Act and Regulations provide for implementing National Environment Protection Measures to protect, restore and enhance the quality of the environment in Australia and ensure the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made National Environment Protection (National Pollutant Inventory) Measures relating to ambient air quality, movement of controlled waste between states and territories, the National Pollutant Inventory, and used packaging materials. The Measure enforces the National Pollutant Inventory (NPI), which collects and publishes data on emissions and transfers of toxic substances.	Yes – Woodside reports atmospheric emissions and waste transfers for its Australian operations, including the North West Shelf facilities in Western Australia to the NPI.	Section 6.7.7 and 6.7.8 (Routine and non-routine atmospheric emissions and greenhouse gas emissions)
National Greenhouse and Energy Reporting Act 2007 National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	This Act and associated Rule establishes the legislative framework for the National Greenhouse and Energy Reporting Scheme for reporting GHG emissions and energy consumption and production by corporations in Australia.	Yes – Woodside are required to report GHG emissions for its Australian operations, including the North West Shelf facilities. Vessel contractors are also required to report GHG emissions under this Act.	Section 6.7.7 and 6.7.8 (Routine and non-routine atmospheric emissions and greenhouse gas emissions)
Native Title Act 1993 *Native Title (Indigenous Land Use Agreements) Regulations 2024*	This Act recognises and protects the traditional rights and interests of First Nation groups in land and waters through native title. Prescribed Bodies Corporate (PBC) manage and protect their native title rights and interests by establishing ways in which future dealings affecting native title may proceed and to set standards for those dealings. Indigenous Land Use Agreements (ILUAs) are voluntary, legally binding agreements established under the Act between native title parties and others regarding land/water use.	Yes – There are six native title claims or determinations overlapping the EMBA and a further nine that are coastally adjacent to the EMBA (see Table 4-17). There are also seven Indigenous Land Use Agreements (ILUAs) overlapping the EMBA and a further 24 that are coastally adjacent to the EMBA (see Table 4-17). Woodside considers native title claims, determinations and ILUAs to be an instructive means of identifying potentially relevant Indigenous groups to consult (see Section 5.3).	Section 4.9.1 (Native Title) Section 5.3 (Identification of relevant persons for consultation) Section 6.11 (Indigenous cultural features and heritage assessment)

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
Navigation Act 2012 *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* Marine Order 12: Construction – subdivision and stability, machinery and electrical installations Marine Order 15: Construction – fire protection, fire detection and fire extinction Marine Order 30: Prevention of collisions Marine Order 47: Offshore Industry units Marine Order 57: Helicopter operations Marine Order 91: Marine pollution prevention – oil Marine Order 93: Marine pollution prevention – noxious liquid substances Marine Order 94: Marine pollution prevention – packaged harmful substances Marine Order 96: Marine pollution prevention – sewage Marine Order 97: Marine pollution prevention – air pollution	This Act regulates navigation and shipping, including SOLAS. This Act is the primary legislation that regulates ship and seafarer safety and shipboard aspects of marine environment protection and pollution prevention. Marine Orders are subordinate rules made pursuant to the *Navigation Act 2012* and *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* affecting the maritime industry. They are a means of implementing Australia's international maritime obligations by giving effect to international conventions in Australian law. Marine Orders apply to vessel movements, safety, discharges and emissions.	Yes - The Act and Marine Orders apply to vessel activities associated with the Petroleum Activity.	Section 6.7.1 (Physical presence: interaction with other marine users) Section 6.7.6 (Routine discharges) Section 6.7.9 (Routine light emissions) Sections 6.8.5, 6.8.6, 6.8.7 and 6.8.8 (Unplanned hydrocarbon release) Section 6.9.1 (Unplanned hydrocarbon or chemical release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management)
Offshore Petroleum and Greenhouse Gas Storage Act 2006	This Act is the principal Act governing offshore petroleum exploration and production in Commonwealth waters. Specific environmental, resource management and safety obligations are set out in the listed Regulations.	Yes – The Petroleum Activity must be undertaken in accordance with the requirements of this Act. This EP has been prepared in accordance with the relevant	Table 1-2 (presents the EP structure against the requirements of the Environment Regulations

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2025 Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2024		requirements of the OPGGS Act and the Environment Regulations.	Section 1.5 (Structure of the Environment Plan) Section 1.8.1 (Offshore Petroleum and Greenhouse Gas Storage Act 2006)
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995	This Act provides for protecting ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone-depleting substances and synthetic GHGs, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozone depleting substances.	Yes – This Act applies where ozone-depleting substances is found on vessel refrigeration systems, however, this is a rare occurrence and not anticipated (Section 3.6.5.2).	Section 6.7.7 (Routine and non-routine atmospheric emissions) Section 6.11 (Indigenous cultural features and heritage values assessment)
Protection of the Sea (Powers of Intervention) Act 1981 Protection of the Sea (Powers of Intervention) Regulations 1983	This Act authorises the Commonwealth to take measures to protect the sea from pollution by oil and other noxious substances discharged from ships. It provides legal immunity for persons acting under an AMSA direction.	Yes – The Act may apply in the event of an unplanned hydrocarbon release.	Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7 and 6.8.8 (Unplanned hydrocarbon release)
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994 Marine Order 91: Marine pollution prevention – oil Marine Order 93: Marine pollution prevention – noxious liquid substances	This Act relates to protecting the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 NM off the coast out to the end of the Australian Exclusive Economic Zone (200 NM). It also applies within the 3 NM of the coast where the State / Northern Territory does not have complementary legislation.	Yes - The Act and Marine Orders apply to vessel activities associated with the Petroleum Activity.	Sections 6.7.4, 6.7.5 and 6.7.6 (Routine and non-routine discharges) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7, 6.8.8 and 6.9.1 (Unplanned hydrocarbon release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management)

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
Marine Order 94: Marine pollution prevention – packaged harmful substances Marine Order 95: Marine pollution prevention – garbage Marine Order 96: Marine pollution prevention – sewage Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007 International Convention for the Prevention of Pollution from Ships (MARPOL Convention)	All the Marine Orders listed, except for Marine Order 95, are enacted under both the *Navigation Act 2012* and the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983.* The Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007 is an amendment to the Protection of the Sea (Prevention of Pollution from Ships) Act 1983. This amended Act provides for protecting the sea from pollution by oil and other harmful substances discharged from ships.		
Protection of the Sea (Harmful Antifouling Systems) Act 2006 Marine Order 98: Marine pollution – anti-fouling systems	This Act relates to Australia's obligations under the international Antifouling System Convention, prohibiting harmful organotin compounds (e.g. TBT) on ship hulls to protect the marine environment. It prohibits the application of such systems on Australian ships and restricts non-complying ships from entering Australian ports.	Yes – The Act applies to vessels operating in Australian waters, including for the Petroleum Activity.	Section 6.9.4 (Physical presence: introduction of invasive marine species)
Seas and Submerged Lands Act 1973	This Act establishes the legal framework for Australia's sovereignty and sovereign rights over its offshore marine areas, including the territorial sea, exclusive economic zone and continental shelf. It implements international law (particularly UNCLOS) into Australian domestic law, defining maritime boundaries and confirming the Commonwealth's authority over offshore waters, seabed and subsoil resources for purposes such as exploration, resource management and environmental protection.	Yes – the Petroleum Activity is located within Australia's EEZ.	Section 3.2 (Location)
Underwater Cultural Heritage Act 2018 *Guidelines on the application of the Underwater Cultural Heritage Act 2018*	The Act prescribes penalties for damaging protected Underwater Cultural Heritage without a permit under Section 30 or in contravention of a permit under Section 28. Protected Underwater Cultural Heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown.	Yes – Table 4-22 lists underwater heritage sites identified within the Operational Area and EMBA.	Section 4.9.8 (Historic underwater heritage) Section 6.7.2 (Physical presence: disturbance to the seabed) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7 and 6.8.8

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Commonwealth legislation	Summary	Relevant to the activity	EP Section
	This protection is also extended to Underwater Cultural Heritage in Commonwealth waters specified by the Environment Minister under Section 17. Without a declaration under this section, Aboriginal Underwater Cultural Heritage is not protected under the Underwater Cultural Heritage Act.		(Unplanned hydrocarbon release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management) Section 6.11 (Indigenous cultural features and heritage values assessment)

The below table refers to WA State legislation related to the Petroleum Activity.

State legislation	Summary	Relevant to the activity	EP Section
The Aboriginal Heritage Act 1972 (WA) Aboriginal Heritage Regulations 1974	This Act is the principal Western Australian legislation for the protection and preservation of Aboriginal Cultural Heritage, including all sites and objects of significance to Aboriginal people, whether or not they are formally recorded. Under the Act, it is an offence to damage or disturb Aboriginal heritage without prior approval from the appropriate authority, and it provides procedures for seeking consent where impacts cannot be avoided.	Yes - Cultural features and heritage values have been identified to potentially overlap the Operational Area and / or EMBA (Table 4-19)	Section 4.9.5 (Sea Country values) Section 6.11 (Indigenous cultural features and heritage assessment)
Biodiversity Conservation Act 2016 (WA) *Biodiversity Conservation Regulations 2018*	This Act first came into effect on 3 December 2016 and replaced the *Wildlife Conservation Act 1950*. Relating to potential impacts to listed species: this Act provides for the conservation and protection of Western Australian wildlife.	Yes – Planned and unplanned activities associated with the Petroleum Activity may impact listed species.	Section 4.6 (Protected species) Section 6.7 (Planned activities) Sections 6.8 and 6.9 (Unplanned activities)
The Heritage Act 2018 (WA) *Heritage Regulations 2019*	This Act is the primary legislation for the protection of historic heritage in Western Australia. It supports the identification, documentation, and management of places of cultural heritage significance. The Act mandates approval or referral for any work that may affect registered heritage places and establishes offences and	Yes – While there are no known Historic Heritage Sites within the Operational Area, there are sites within the EMBA (refer to Sections 4.9.7, 4.9.8 and 4.9.9).	Sections 4.9.7, 4.9.8 and 4.9.9 (Cultural values and heritage) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7 and 6.8.8

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State legislation	Summary	Relevant to the activity	EP Section
	regulations to prevent unauthorised damage or modifications of heritage-listed sites.		(Unplanned hydrocarbon release)
Western Australian Fish Resources Management Act 1994 (WA) Fish Resources Management Regulations 1995 (WA)	This Act aims to manage fisheries and aquaculture in a sustainable way to ensure the long-term health of fish stocks and aquatic. Under the Act, the Department has emergency powers to deal with incursions of IMS, which include directing a person to perform necessary activities to prevent or control the spread of IMS, or to eradicate them in WA waters. Under section 105 of the Act, it is an offence to bring noxious fish into WA. Under the Regulation 176, it is an offence to translocate live non-endemic fish to WA without permission. Under Regulation 70 and Schedule 5 of the Regulations it is an offence to bring noxious fish into WA.	No - The Petroleum Activity is located in Commonwealth waters. Transit to and from the Operational Area by support vessels, and port activities associated with these vessels, are not within the scope of this EP.	N/A

The below table refers to International Agreements and Conventions related to the Petroleum Activity.

International Agreements and/or Conventions	Summary	Relevant to the activity	EP Section
Agreement Between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and Their Environment 1974 (commonly referred to as the Japan Australia Migratory Bird Agreement or JAMBA)	This agreement recognises the special international concern for the protection of migratory birds and birds in danger of extinction that migrate between Australia and Japan. Implemented in EPBC Act 1999.	Yes – Planned and unplanned activities associated with the Petroleum Activity may impact migratory birds relevant to this Agreement.	Section 4.6.4 (Seabirds and migratory shorebirds) Section 6.7.9 (Routine light emissions) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7 and 6.8.8 (Unplanned hydrocarbon release) Section 6.9.1 (Unplanned hydrocarbon or chemical release) Section 6.9.2 (Unplanned discharges: hazardous
Agreement Between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and Their Environment 1986 (commonly referred to as the China Australia Migratory Bird Agreement or CAMBA)	This agreement recognises the special international concern for the protection of migratory birds and birds in danger of extinction that migrate between Australia and China. Implemented in EPBC Act 1999.		

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International Agreements and/or Conventions	Summary	Relevant to the activity	EP Section
			and non-hazardous waste management)
Convention for the Control of Transboundary Movements of Hazardous Wastes and Their Disposal 1989 (Basel Convention)	This convention deals with the transboundary movement of hazardous wastes, particularly by sea. Implemented in *Hazardous Waste (Regulation of Exports and Imports) Act 1989*.	No – The activity does not involve transboundary movement of hazardous wastes. Any future decommissioning activities involving the transboundary movement of hazardous waste will be assessed under separate EPs and against the legislation in force at that time.	N/A
Convention on the Conservation of Migratory Species of Wild Animals 1979 (Bonn Convention)	The Bonn Convention aims to improve the status of all threatened migratory species through national action and international agreements between range states of particular groups of species.	Yes - Planned and unplanned activities associated with the Petroleum Activity may impact threatened migratory species relevant to this Agreement.	Section 4.6 (Protected species) Section 6.7.3 (Routine acoustic emissions) Section 6.7.5 (Routine and non-routine discharges: produced water) Section 6.7.9 (Routine light emissions) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7 and 6.8.8 (Unplanned hydrocarbon release) Section 6.9.1 (Unplanned hydrocarbon or chemical release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management) Section 6.9.3 (Physical presence: interaction with marine fauna)

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International Agreements and/or Conventions	Summary	Relevant to the activity	EP Section
Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS)	The COLREGS are a set of rules that apply to prevent the collision of vessels at sea and apply to vessels navigating waters outside of the COLREGS demarcation lines. Activity vessels will comply with the COLREGS, including in particular, through the use of appropriate lights and shapes to reflect the nature of operations. The convention is given effect in Australia through Marine Order 30 (see Commonwealth legislation table above).	Yes – The convention applies to vessel movements associated with the Petroleum Activity.	Section 6.8.7 (Unplanned hydrocarbon release: loss of marine vessel separation)
Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC 90)	This convention comprises national arrangements for responding to oil pollution incidents from ships, offshore oil facilities, sea ports and oil handling. The Convention was adopted under the International Maritime Organization (IMO) in 1990. Parties to the convention are required to establish measures for dealing with pollution incidents, either nationally or in co-operation with other countries. Ships are required to carry a shipboard oil pollution emergency plan (SOPEP / SMPEP). Operators of offshore units are also required to have oil pollution emergency plans or similar arrangements which must be co-ordinated with national systems for responding promptly and effectively to oil pollution incidents.	Yes – The convention applies to vessels associated with the Petroleum Activity, which are required to carry a shipboard oil pollution emergency plan (SOPEP / SMPEP). The OSPRMA (Appendix G) and First Strike Pan (Appendix H) include arrangements for managing oil spills from the Petroleum Activity. The OSPRMA includes Jurisdictional Authority for managing spills and the relationship between the OSPRMA and Commonwealth and State response plans.	Section 6.8.7 (Unplanned hydrocarbon release: loss of marine vessel separation) Section 6.9.1 (Unplanned hydrocarbon or chemical release) OSPRMA (Appendix G) First Strike Pan (Appendix H)
International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention) 2004	The convention is an international treaty adopted by the International Maritime Organization (IMO) to prevent the spread of invasive aquatic species and pathogens. The convention establishes standards for the management and control of ships' ballast water and sediments. Must either use an IMO-recognized authority approved ballast water management system or use another IMO-compliant method of managing ballast water.	Yes - The convention is adopted through the *Biosecurity Act 2015* and its associated regulations, which contain several requirements for managing ballast water with which the Petroleum Activity vessels will be required to comply (see Commonwealth legislation table above).	Section 6.9.4 (Physical presence: introduction of invasive marine species)
International Convention for the Prevention of Pollution from Ships 1973/1978 (MARPOL 73/78)	MARPOL 73/78 is the primary international convention aimed at preventing marine pollution by ships from operational or accidental causes. The convention is structured around six technical Annexes that set regulations for different types of marine pollution. The	Yes – This convention is adopted through the *Navigation Act 2012* and relevant Marine Orders which apply to vessel activities associated with the Petroleum Activity (see Commonwealth legislation table above).	Section 6.7.1 (Physical presence: interaction with other marine users)

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International Agreements and/or Conventions	Summary	Relevant to the activity	EP Section
	legislation giving effect to MARPOL 73/78 in Australia is the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*, the *Navigation Act 2012* and relevant Marine Orders. Refer also to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*, *Navigation Act 2012* and Marine Orders (see Commonwealth legislation table above).		Section 6.7.5 (Routine light emissions) Section 6.7.6 (Routine and non-routine discharges: utility systems, drains and support vessels) Section 6.8.7 (Unplanned hydrocarbon release: loss of marine vessel separation) Section 6.9.1 (Unplanned hydrocarbon or chemical release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management)
International Convention for the Safety of Life at Sea 1974 (SOLAS)	This convention concerns the safety of merchant ships Implemented in the *Navigation Act 2012* and accompanying Marine Orders.	Yes – This convention is adopted through the *Navigation Act 2012* and relevant Marine Orders which apply to vessel activities associated with the Petroleum Activity (see Commonwealth legislation table above).	Section 6.7.1 (Physical presence: interaction with other marine users) Section 6.7.5 (Routine light emissions) Section 6.8.7 (Unplanned hydrocarbon release: loss of marine vessel separation)
Minamata Convention on Mercury 2013	This Convention is an agreement to protect human and environmental health from the effects of releases of mercury and mercury-containing compounds to the environment. The convention was ratified by Australia in	Yes – the convention applies to discharge of PW.	Section 6.7.5 (Routine and non-routine

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International Agreements and/or Conventions	Summary	Relevant to the activity	EP Section
	2021 and is implemented in Commonwealth law, effective from 2022.		discharges: produced water)
Ramsar Convention on Wetlands 1971	This Convention provides an international framework for the conservation and wise use of wetlands, recognising their ecological importance and their role in supporting biodiversity, including migratory species.	No – Neither the Operational Area or EMBA overlap with Wetlands of International Importance (Ramsar) (Table 4-2).	N/A
United Nations Convention on Biological Diversity 1992	This Convention was established at the 1992 Rio Earth Summit to provide a global framework for protecting the Earth's biodiversity. Its core purpose is to address the ongoing loss of ecosystems, species, and genetic diversity through coordinated international action.	Yes – Planned and unplanned activities associated with the Petroleum Activity may interact with MNES (threatened and migratory species) protected under the EPBC Act.	Section 4.6 (Protected species) Section 6.7.3 (Routine acoustic emissions) Section 6.7.5 (Routine and non-routine discharges: produced water) Section 6.7.9 (Routine light emissions) Sections 6.8.3, 6.8.4, 6.8.5, 6.8.6, 6.8.7 and 6.8.8 (Unplanned hydrocarbon release) Section 6.9.1 (Unplanned hydrocarbon or chemical release) Section 6.9.2 (Unplanned discharges: hazardous and non-hazardous waste management) Section 6.9.3 (Physical presence: interaction with marine fauna)
United Nations Convention on the Law of the Sea (UNCLOS) 1982	The United Nations Convention on the Law of the Sea (UNCLOS) is an international treaty established in 1982 to provide a comprehensive legal framework governing the	Yes – UNCLOS underpins Commonwealth jurisdiction over petroleum activities within Australia's Exclusive Economic Zone and	Section 3.2 (Location)

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International Agreements and/or Conventions	Summary	Relevant to the activity	EP Section
	world's oceans and seas. Its core purpose is to create a stable, rules-based system for how countries use, manage, and protect marine environments and resources. The UNCLOS to which Australia is a party, entered into force on 16 November 1994.	continental shelf. It also imposes obligations to prevent, reduce and control marine pollution and protect the marine environment from offshore and maritime activities. In Australia, UNCLOS is implemented via multiple Acts which give effect to marine environmental obligations, such as MARPOL, operationalising UNCLOS principles.	Section 4.3 (Matters of national environmental significance) Section 6.7 (Planned activities) Sections 6.8 and 6.9 (Unplanned activities)
United Nations Framework Convention on Climate Change (UNFCC) 1992 Paris Agreement 2015	The objective of the convention is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system. Australia ratified the UNFCC in December 1992, and it came into force on 21 December 1993 and ratified the Paris Agreement on 10 November 2016.	Yes – Direct and indirect atmospheric and Greenhouse gas emissions are assessed as part of the Petroleum Activity as a result of vessel use and onshore gas processing.	Sections 6.7.7 and 6.7.8 (Routine and non-routine atmospheric and greenhouse gas emissions)

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APPENDIX C WOODSIDE MASTER EXISTING ENVIRONMENT

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Description of the Existing Environment

August 2026

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan (EP), to Woodside Energy Ltd. and Woodside Energy Group (Woodside) activities and operations.

1.2 Scope

Woodside is the titleholder of multiple petroleum titles for exploration, development, production and decommissioning activities in the marine waters of north-western Western Australia (WA). This document includes details of the relevant values and sensitivities of the environment as required by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Commonwealth) (OPGGS (E) Regulations), to inform the impact and risk evaluation of Woodside's activities. Additional information, appropriate to the nature and scale of the impacts and risks of activities that may interact with the environment outside of the scope of this document, will be used to further inform impact and risk assessments and be included in the Description of the Existing Environment of individual EPs.

This Master Existing Environment document identifies and describes the values and sensitivities of the existing environment within the broadly defined Woodside activity areas located in Commonwealth and coastal waters off north-western WA, with a focus on the North-west Marine Region (NWMR), including adjacent coastal waters and shoreline habitats. This document also summarises the regional key values of the South-west Marine Region (SWMR) (extending the WA/South Australia (SA) border) and the North Marine Region (NMR), including adjacent coastal waters and shoreline habitats, as they are relevant to the environment that may be affected (EMBA)[1].

The marine bioregions are described Table 1-1 and shown in Figure 1-1. The NWMR is divided into three large-scale ecological marine systems based on the influence of major ocean currents, seafloor features and eco-physical processes, including Kimberley, Pilbara and Ningaloo-Leeuwin. For the NWMR, Table 1-1 outlines the associated marine systems and relevant Woodside activity areas.

Table 1-1: Description of the marine bioregions, marine systems and associated Woodside activity area and key environmental sensitivities

Marine bioregion*	Marine system	Relevant key environmental sensitivities	Woodside activity area
North-west (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012a) The NWMR includes all Commonwealth waters (from three nautical miles (NM) from the Territorial Sea Baseline to the 200 nm Exclusive Economic Zone (EEZ) boundary) extending from the WA/Northern Territory (NT) border to Kalbarri, south of Shark Bay in WA, covering an area of about 1.07 million km², and includes extensive areas of shallower waters on the continental shelf, as well as deep areas of abyssal plain where water is 5,000 m or deeper.	**Kimberley** The northern boundary is the limit of the NWMR; the southern boundary extends west of Broome to the northern edge of the Exmouth Plateau.	• Scott Reef • Rowley Shoals	Browse Basin
	Pilbara The northern boundary extends west of Broome to the northern edge of Exmouth plateau; the southern boundary follows a line west of North West Cape along the southern boundary of Exmouth Plateau.	• Dampier Archipelago • Rankin Bank • Glomar Shoal	North West Shelf (NWS), inclusive of Scarborough gas fields
	Ningaloo-Leeuwin The northern boundary extends from shore at North West Cape directly out along Cape Range escarpment; the southern boundary is the limit of the NWMR.	• Ningaloo • Muiron Islands • Exmouth Gulf	North West Cape

[1] The EMBA encompasses the environmental and social values and sensitivities that might be contacted by surface or subsurface hydrocarbons in the unlikely event of any worst-case spill from Woodside's activities. The values and sensitivities include the physical environments and biological communities present, in addition to protected species and areas, and socioeconomic and cultural values.

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Marine bioregion*	Marine system	Relevant key environmental sensitivities	Woodside activity area
South-west (DSEWPaC 2012b)** The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in SA to Shark Bay in WA. The region spans about 1.3 million km² of temperate and subtropical waters and abuts the coastal waters of SA and WA.	Not applicable.	Key environmental values at a regional level considered relevant in the context of the EMBA	No applicable Woodside activity area
North (DSEWPaC 2012c) The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT/WA border). The region covers about 625,689 km² of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.			

**The EMBA for the marine bioregions used in this document has been extended to include adjacent coastal waters and shoreline habitats.*

***The extent of the SWMR for this document has been adjusted to only include marine and coastal waters extending from Shark Bay in WA to the WA/SA border. The boundary of the SWMR as described by DSEWPaC (2012b) extends to the eastern end Kangaroo Island in SA. However, this boundary lies outside the scope of this document.*

1.3 Methodology

This document is informed by resources that include:

- a search of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) for the marine bioregions (NWMR, SWMR and NMR) and adjacent coastal waters and shoreline habitats (Appendix A)
- State (WA)/Commonwealth marine park management plans
- the *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* (Commonwealth) (EPBC Act) Species Profile and Threats Database (SPRAT)
- EPBC Act Part 13 statutory instruments: recovery plans, conservation advice and wildlife conservation plans for listed threatened and migratory species
- peer-reviewed scientific publications, as well as Woodside and joint venture-funded studies and other titleholder-funded study findings available in the public domain.

The PMST uses a conservative, grid-based search methodology rather than precise coordinates to determine the potential presence of matters of national environmental significance (MNES). For marine areas located more than 30 km offshore, this involves using 32 km × 32 km grid cells to identify spatial overlap with listed MNES. As a result, the PMST report (Appendix A) may identify MNES that do not directly intersect with the EMBA, including environmental and socioeconomic receptors that do not overlap with the marine environment or have coastal interface. The Australian Marine Spatial Information System was used to determine the exact location of a feature to determine whether it overlaps or is adjacent to the EMBA. Accordingly, MNES identified in the PMST that are not within the EMBA or associated with marine or coastal environments, and species that do not rely on marine or shoreline habitats (for example, species with no marine foraging or life-cycle processes), have not been assessed within this document.

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1.4 Review and revision

The information presented in this document is reviewed and updated least every five years. Key updates are captured in a ‘change register’. Material risk may trigger updates within the five-year review period, as per the OPGGS (E) Regulations. Key updates may include the status of EPBC Act listed species, Part 13 instruments, policies and guidelines, key advice from external stakeholders, and recently published scientific literature.

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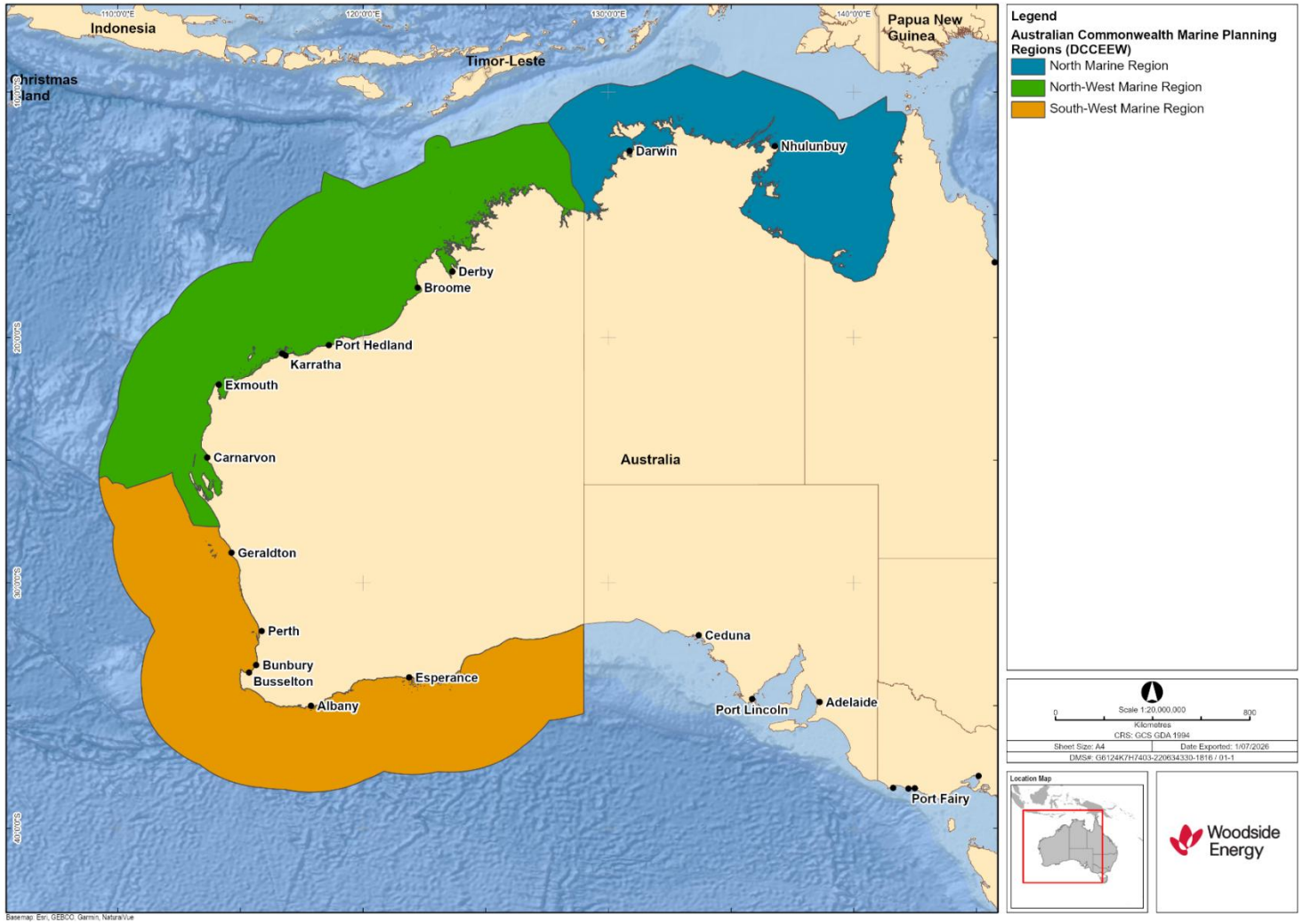


Figure 1-1: Marine bioregions – NWMR, SWMR, NMR and South-east (as defined under the Environment Protection and Biodiversity Conservation Act (EPBC Act)), including adjacent coastal waters and shoreline habitats

Refer to DCCEEW (2021b)

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2. PHYSICAL ENVIRONMENT

2.1 Regional context

Table 2-1 presents the key physical characteristics of the NWMR, SWMR and NMR. The remainder of this section then focuses entirely on the NWMR.

Table 2-1: Key physical characteristics of the NWMR, SWMR and NMR

Bioregion	Key characteristics
NWMR (DSEWPaC 2012a)	The NWMR experiences a tropical monsoonal climate towards the northern extent of the region, transitioning to tropical arid and subtropical arid within the central and southern areas of the region. The NWMR is part of the Indo-Australian Basin, the ocean region between the north-west coast of Australia and the Indonesian islands of Java and Sumatra. Dominant currents in the region include: the South Equatorial Current, the Indonesian Throughflow, the Eastern Gyral Current, and the Leeuwin Current (Department of Environment, Heritage, Water and the Arts (DEWHA) 2007a). The seafloor of the NWMR consists of four general feature types – continental shelf, continental slope, continental rise and abyssal plain – and is distinguished by a range of topographic features, including canyons, plateaus, terraces, ridges, reefs, banks and shoals.
SWMR (DSEWPaC 2012b)	The SWMR contains both subtropical and temperate climates, with overall light climatic cycles. The SWMR experiences complex and unusual oceanographic patterns, driven largely by the Leeuwin Current and its associated currents, which have a significant influence on biodiversity distribution and abundance. The major seafloor features of the SWMR include a narrow continental shelf on the west coast to the waters off south-west WA, and a wide continental shelf dominated by sandy carbonate sediments of marine origin in the Great Australian Bight. The region also contains a steep, muddy continental slope, many canyons and large tracts of abyssal plains.
NMR (DSEWPaC 2012c)	The NMR experiences a tropical monsoonal climate with complex weather cycles, including high temperatures and heavy seasonal yet variable rainfall and cyclones, which can be both destructive (loss of seagrass and mangroves) and constructive (mobilisation of sediment into coastal habitats). The NMR comprises Commonwealth waters from West Cape York Peninsula to the NT/WA border, covering tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. Currents in the NMR are driven largely by strong winds and tides, with only minor influences from oceanographic currents such as the Indonesian Throughflow and the South Equatorial Current. The seafloor of the NMR consists mainly of a wide continental shelf, as well as other geomorphological features such as shoals, banks, terraces, valleys, shallow canyons and limestone pinnacles.

2.2 Marine systems of the North-west Marine Region (NWMR)

The NWMR is divided into three large-scale ecological marine systems – the Kimberley, the Pilbara and Ningaloo-Leeuwin – based on the influence of major ocean currents, seafloor features and eco-physical processes (such as climate, tides, freshwater inflow) upon the region (DSEWPaC 2012a).

The three large-scale marine systems approximate the Woodside activity areas, which include Browse Basin, the NWS/Scarborough, and North West Cape (see Section 1.2 for Woodside activity areas) within the NWMR (Figure 2-1). Table 2-2 outlines the key characteristics of each marine system.

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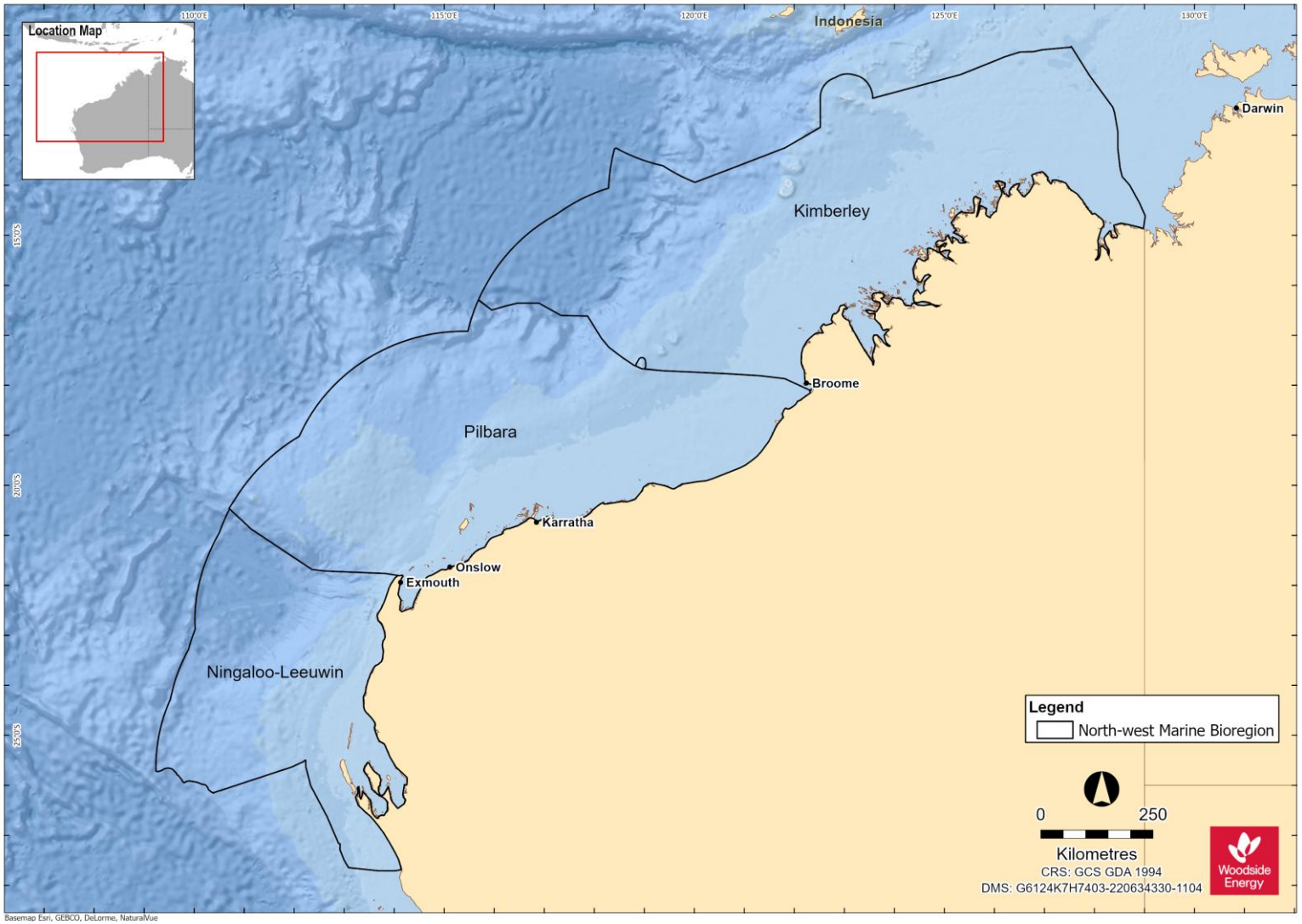


Figure 2-1: The marine systems of the NWMR

Source: DEWHA (2007a)

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Table 2-2: Key characteristics of the marine systems of the NWMR

Marine system	Key characteristics
Kimberley	• Tropical monsoonal climate • Strong influence from Indonesian Throughflow • Predominantly tropical Indo-Pacific species • Subject to episodic offshore cyclonic activity, rarely crossing the coast • Large tidal regimes • Freshwater input from terrestrial monsoonal runoff • Turbid coastal waters (as in, light-limited systems) • Dominated by shelf environments • Predominantly hard substrates in inner to mid-shelf environments • Includes shelf-edge atolls: Scott Reef, Rowley Shoals
Pilbara	• Tropical arid climate • Transition between Indonesian Throughflow and Leeuwin Current dominated areas • Predominantly tropical species • High cyclone activity with frequent crossing of the coast • Transitional tidal zone • Internal tide activity • Large areas of shelf and slope • Dry coast with ephemeral freshwater inputs
Ningaloo-Leeuwin	• Subtropical arid climate Leeuwin Current consolidates • Transitional tropical/temperate faunal area • Higher water clarity in nearshore and offshore environments • Narrow shelf and slope • Marginal tidal range • Seasonal wind forcing more dominant influence on marine environment

Source: DEWHA (2007a)

2.3 Meteorology and oceanography

This section describes the general meteorological conditions and oceanography for the NWMR and provides further detail for the three Woodside activity areas (Table 2-3). The NWMR is influenced by a complex system of ocean currents that change between seasons and between years, which generally result in its surface waters being warm and nutrient-poor, and of low salinity (DEWHA 2007a). The mix of bathymetric features, complex topography and oceanography across the whole north-west marine environment has created and supports a globally important marine biodiversity hotspot (Wilson 2013). Table 2-3 provides high-level physical characteristics of the marine environment within and across the NWMR. This subsection does not describe warming trends or discuss forecast trajectories for the NWMR.

Table 2-3: NWMR climate and oceanography summary

Receptor	Description
Meteorology	
Seasonal patterns	Seasonal changes in wind direction and rainfall are important factors for driving the ecological processes in the NWMR (DSEWPaC 2012a). The broader NWMR experiences variations of a tropical or monsoon climate, with the northern areas featuring two distinct seasons: the dry season from May to September, and the wet season from October through to April. The wet season is Australia's peak period for tropical cyclones, rainfall and severe thunderstorms (Bureau of Meteorology (BOM) 2026a). The peak of the cyclone season usually occurs between December and March (DSEWPaC 2012a). The Kimberley region features a tropical monsoonal climate, the Pilbara region features a tropical arid climate, and the Ningaloo-Leeuwin region experiences a subtropical arid climate (DEWHA 2007a).

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Receptor	Description
Air temperature and rainfall	Temperatures and rainfall vary seasonally in the NWMR region. Higher temperatures usually occur during the wet season, with average daily maximum temperatures ranging between 27ºC and 39ºC, and average daily minimum temperatures ranging between 12ºC and 27ºC. Cooler temperatures occur in the dry season; the average daily maximum temperatures range from 21ºC to 36ºC and average daily minimum temperatures range between 9ºC and 21ºC (Figure 2-2 and Figure 2-3 (BOM 2024)). Higher rainfall in the region typically occurs during the northern wet season, with the average rainfall between 100 mm and 2,400 mm, with highest falls observed late in the season. Comparatively, the average rainfall in the dry season is between 100 mm and 300 mm (BOM 2024). These seasonal occurrences are often associated with the passage of tropical low-pressure systems and cyclones (DSEWPaC 2012a).
Wind	Wind patterns in north-west WA are dictated by the seasonal movement of atmospheric pressure systems. During the northern wet season, high-pressure cells produce prevailing winds from the north-west and south-west, which vary between 10 and 13 m/s. During the dry season, high-pressure cells over central Australia produce north-easterly to south-easterly winds with average speeds of between 6 and 8 m/s (BOM 2022b). Refer to Figure 2-4.
Tropical cyclones	Tropical cyclone activity occurs during the wet season, with cyclone activity typically occurring between November and April, although few cyclones tend to occur during November. About five to six tropical cyclones occur in WA during each cyclone season, with about half of these becoming severe (BOM 2026b). See Figure 2-6.
Oceanography	
Ocean temperature	Waters in the NWMR are tropical year-round, with sea surface temperatures in open shelf waters typically reaching about 26°C in summer and dropping to about 22°C in winter. Nearshore temperatures (as recorded for the NWS area) fluctuate more annually, from about less than 23°C in winter to about 31°C in summer (Hallenberger *et al.* 2022), indicative of present-day sea surface temperatures, acquired from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Oceans and Atmosphere database. Warmer sea surface temperatures are also driven by the decadal variation of Niño/Niña strength in the NWMR. The Atlantic warm sea surface temperature anomalies from the Niño/Niña events drive a series of climate mean-state changes in the Indo-Pacific region, including sea surface temperature warming in the tropical eastern Indian Ocean (Xue *et al.* 2025). See Figure 2-7 and Figure 2-8, for the seasonal variation across and within the NWMR.
Currents	The major surface currents influencing north-west WA flow towards the poles and include the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current and the Eastern Gyral Current. The Ningaloo Current, the Holloway Current, the Shark Bay Outflow and the Capes Current are seasonal surface currents in the region. Below these surface currents are several subsurface currents, the most important of which are the Leeuwin Undercurrent and the West Australian Current. These subsurface currents flow towards the equator in the opposite direction to surface currents (DEWHA 2007a). The Indonesian Throughflow and Leeuwin Current weaken during the dry season (April to September), and more so during El Niño years (DSEWPaC 2012a). See Figure 2-9. The offshore waters of the NWMR are characterised by surface and subsurface boundary currents that flow along the continental shelf/slope and are enhanced through inflows from the ocean basins. They are an important conduit for the poleward heat and mass transport along the west coast (Wijeratne *et al.* 2018). Local physical oceanography is strongly influenced by the large-scale water movements of the Indonesian Throughflow (Liu *et al.* 2015; Sutton *et al.* 2019). Typically, a warm and well-mixed oligotrophic surface layer, and a cooler and more nutrient-rich deeper water layer (Menezes *et al.* 2013).
Waves	Sea surface waves within the NWMR generally reflect the direction of the synoptic winds and flow predominantly from the south-west in the summer and east in winter (Pearce *et al.* 2003). The NWS within the NWMR is a known area of internal wave generation. Both internal tides and internal waves are thought to be more prevalent during summer months due to the increased stratification of the water column (DEWHA 2007a). Along the continental slope of the NWMR, strong internal waves and interaction between semi-diurnal tidal currents and seabed topographic features facilitate upwelling events and localised productivity events (Holloway 2001).

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Receptor	Description
Tides	Tides on the NWS increase as the water moves from deep towards the shallower coast. The highest offshore tides are experienced at the border of the Browse and Canning basins. The smallest tides are experienced at the Exmouth Plateau, near the coast. Tides of the NWS are predominantly semi-diurnal (two highs and two lows each day), but with increasing importance of the diurnal (once per day) inequality at the southern and northern extremities of the NWS. The tide range – represented by the mean spring range – increases northwards along the coast from 1.4 m at North West Cape (Point Murat) to 7.7 m at Broome, before decreasing again (apart from local amplification in King Sound and Collier Bay) to about 5 m off Cape Londonderry. The mean spring range then increases again through Joseph Bonaparte Gulf and on up 5.5 m at Darwin (RPS 2016).

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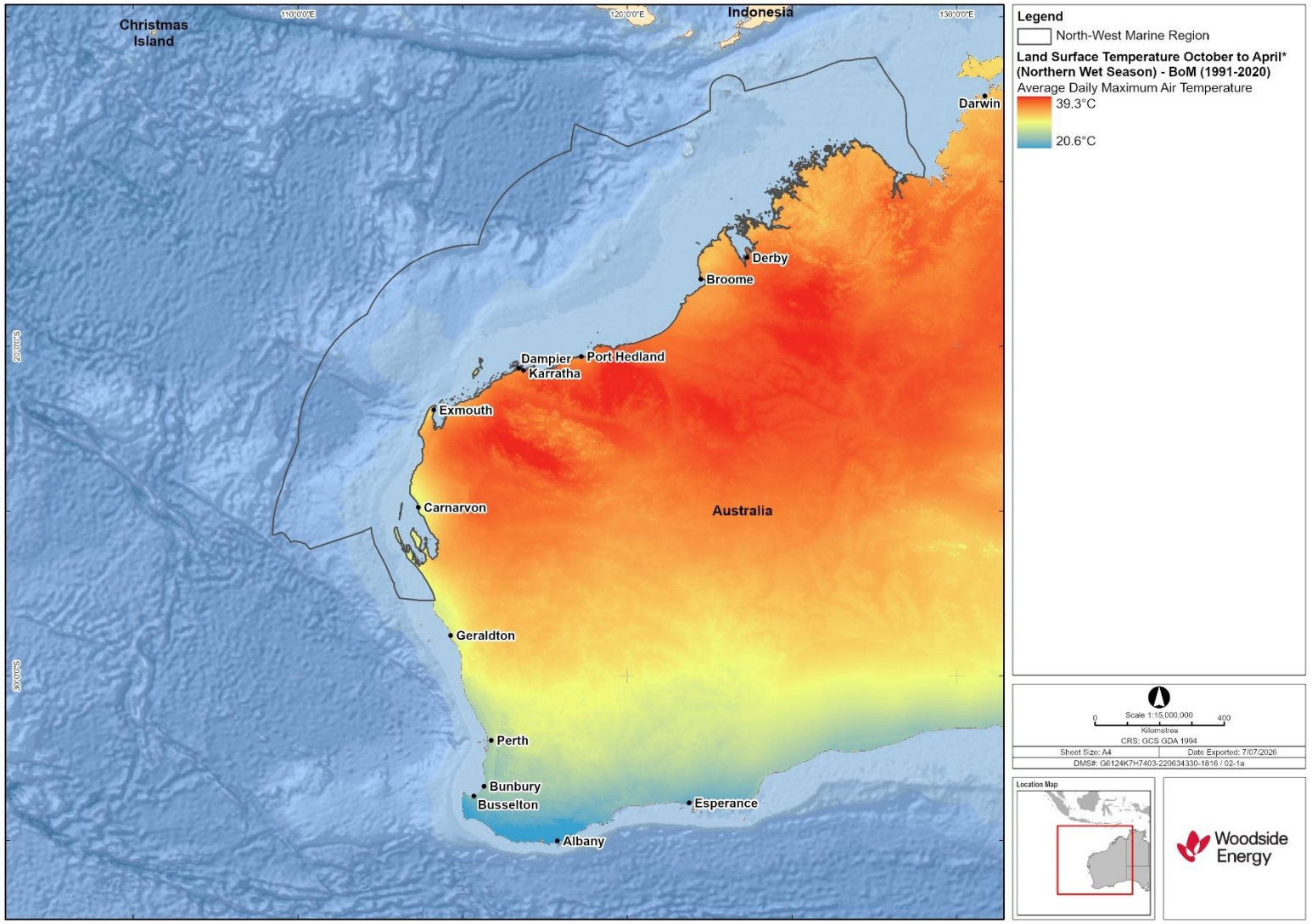


Figure 2-2: Average daily maximum air temperature for land surface adjacent to NWMR – northern wet season

Source: BOM (2022a)

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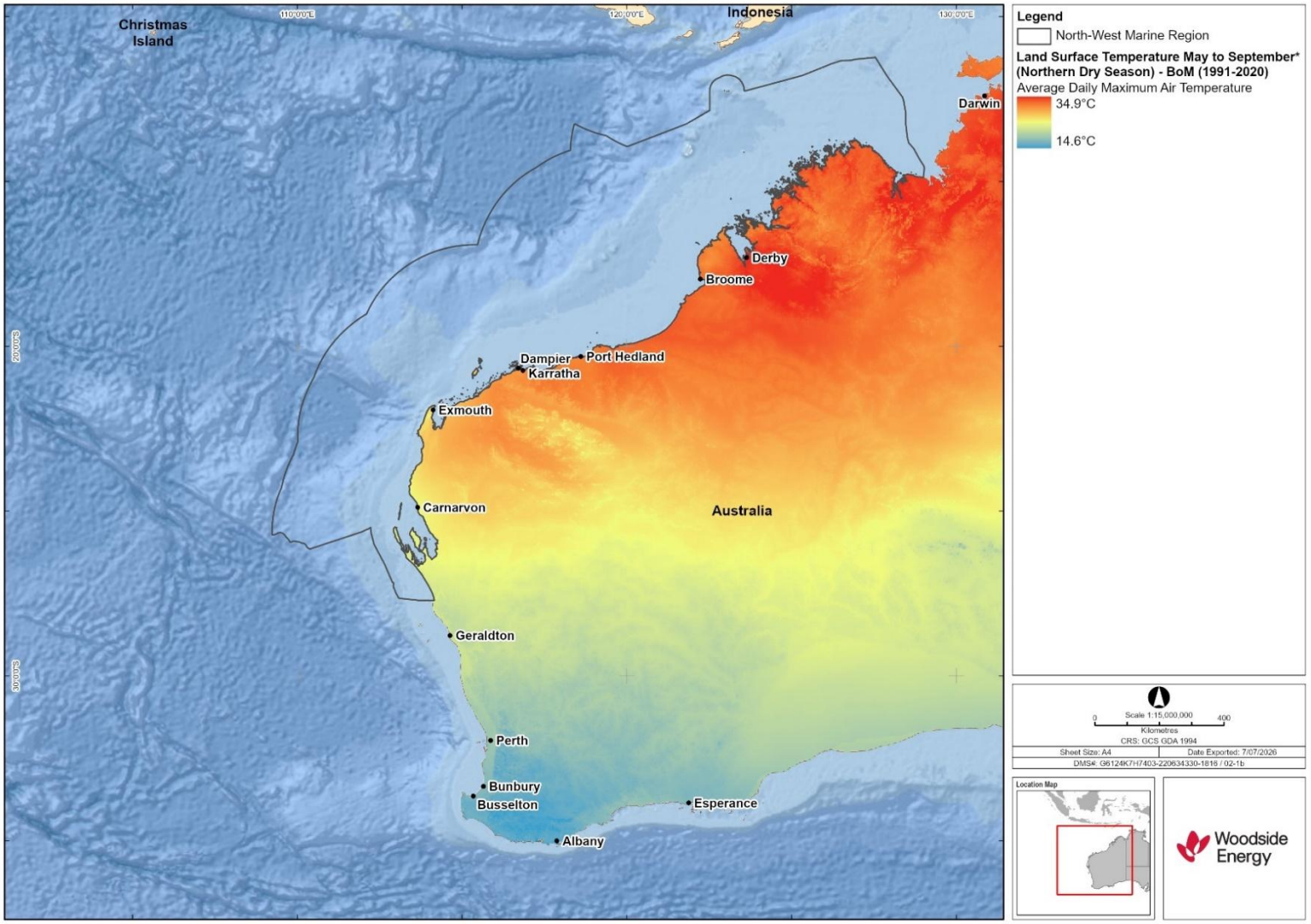


Figure 2-3: Average daily maximum air temperature for land surface adjacent to NWMR – northern dry season

Source: BOM (2022a)

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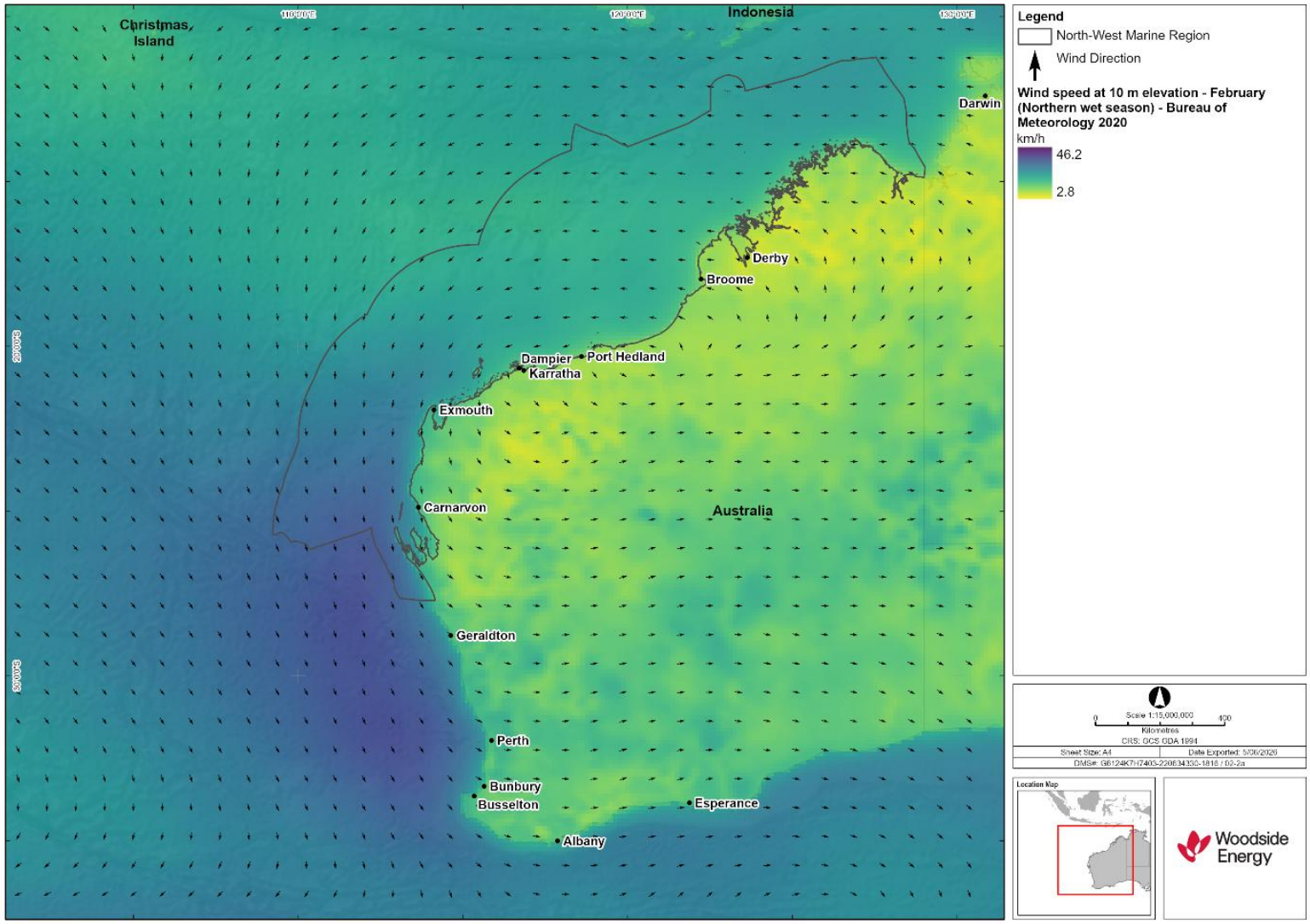


Figure 2-4: Average monthly surface wind direction and velocity for NWMR – February, northern wet season

Source: BOM (2020a)

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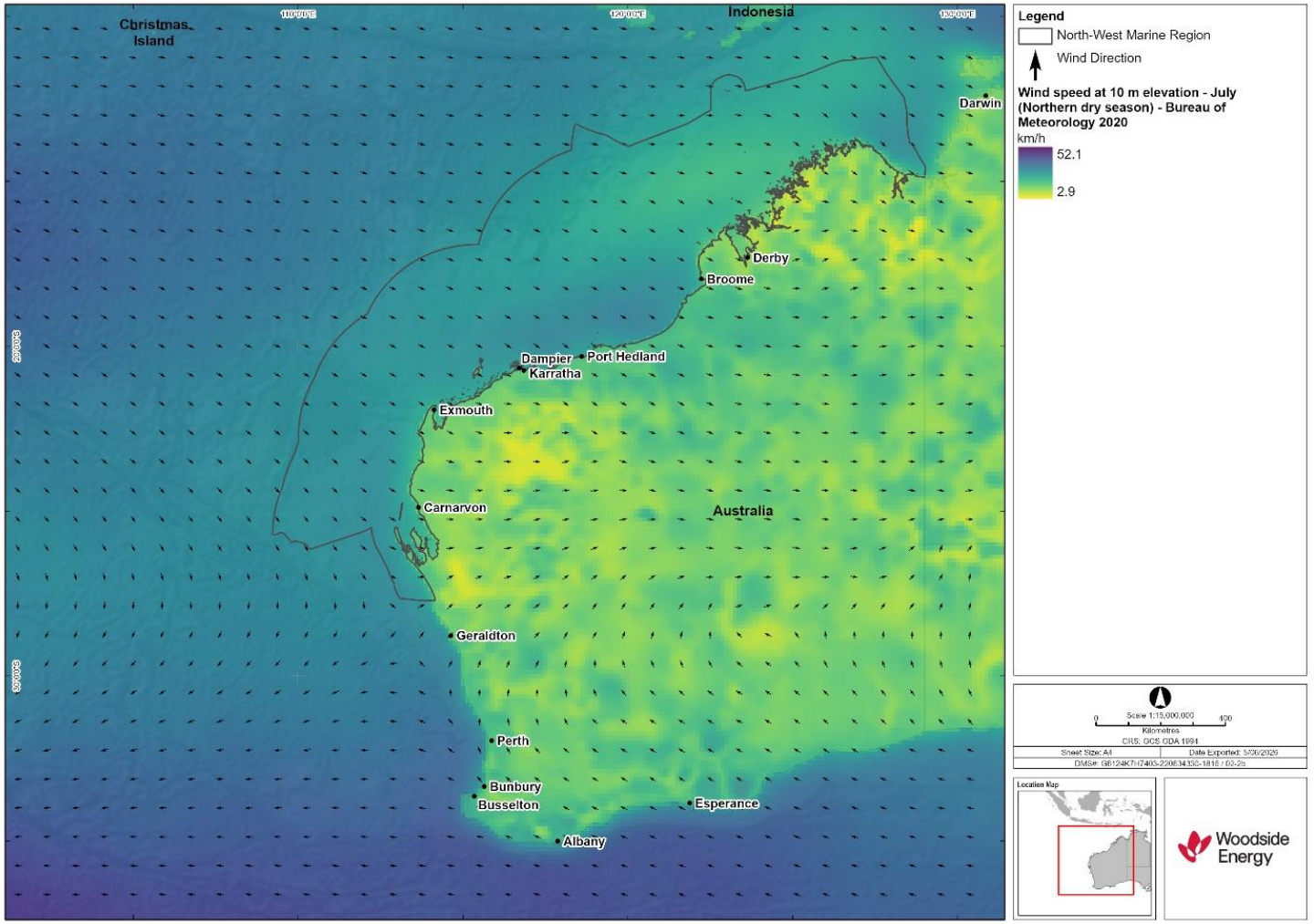


Figure 2-5: Average monthly surface wind direction and velocity for the NWMR – July, northern dry season

Source: BOM (2020a)

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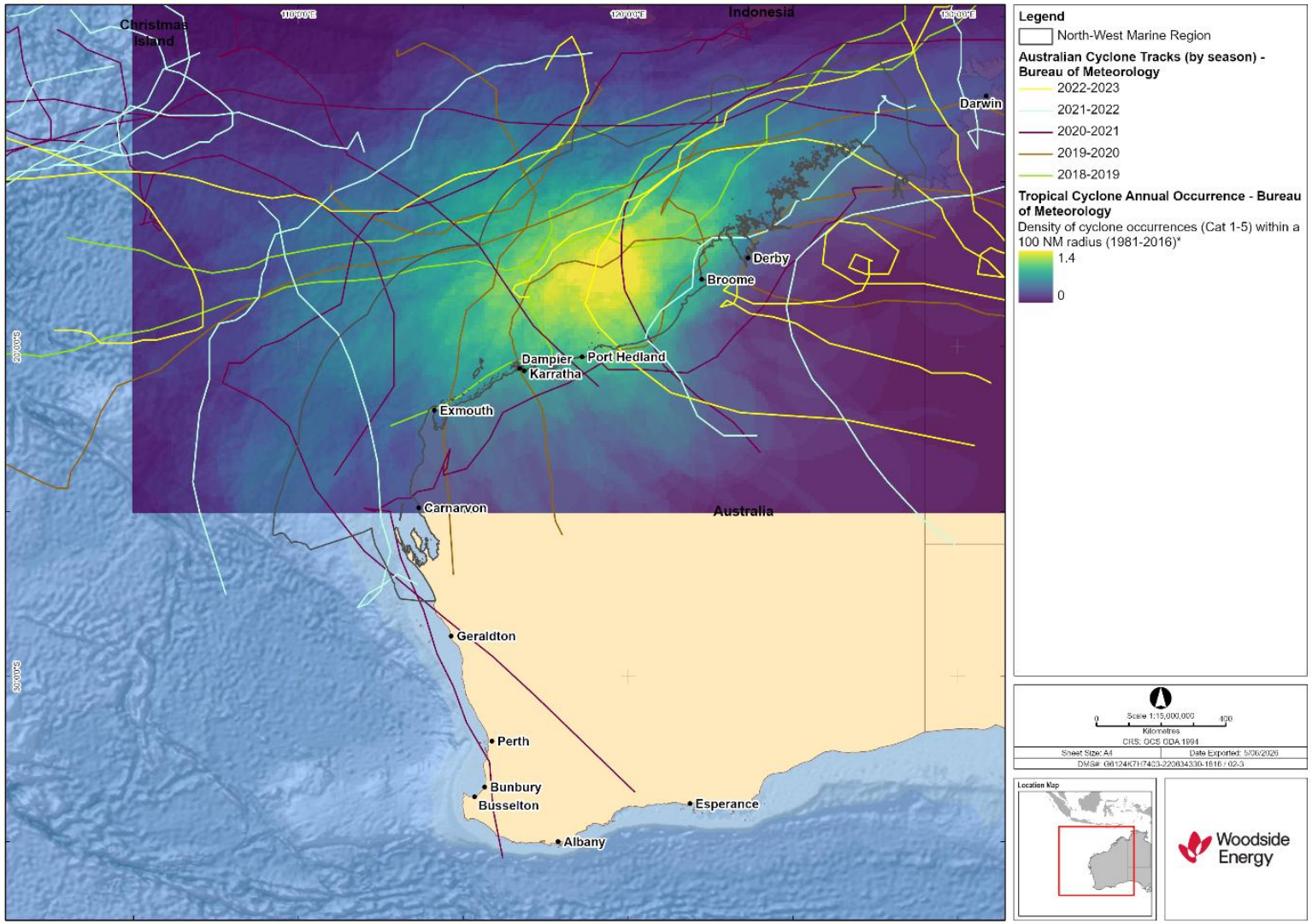


Figure 2-6: Tropical cyclone annual occurrence and cyclone tracks for the NWMR

Source: BOM (2022a)

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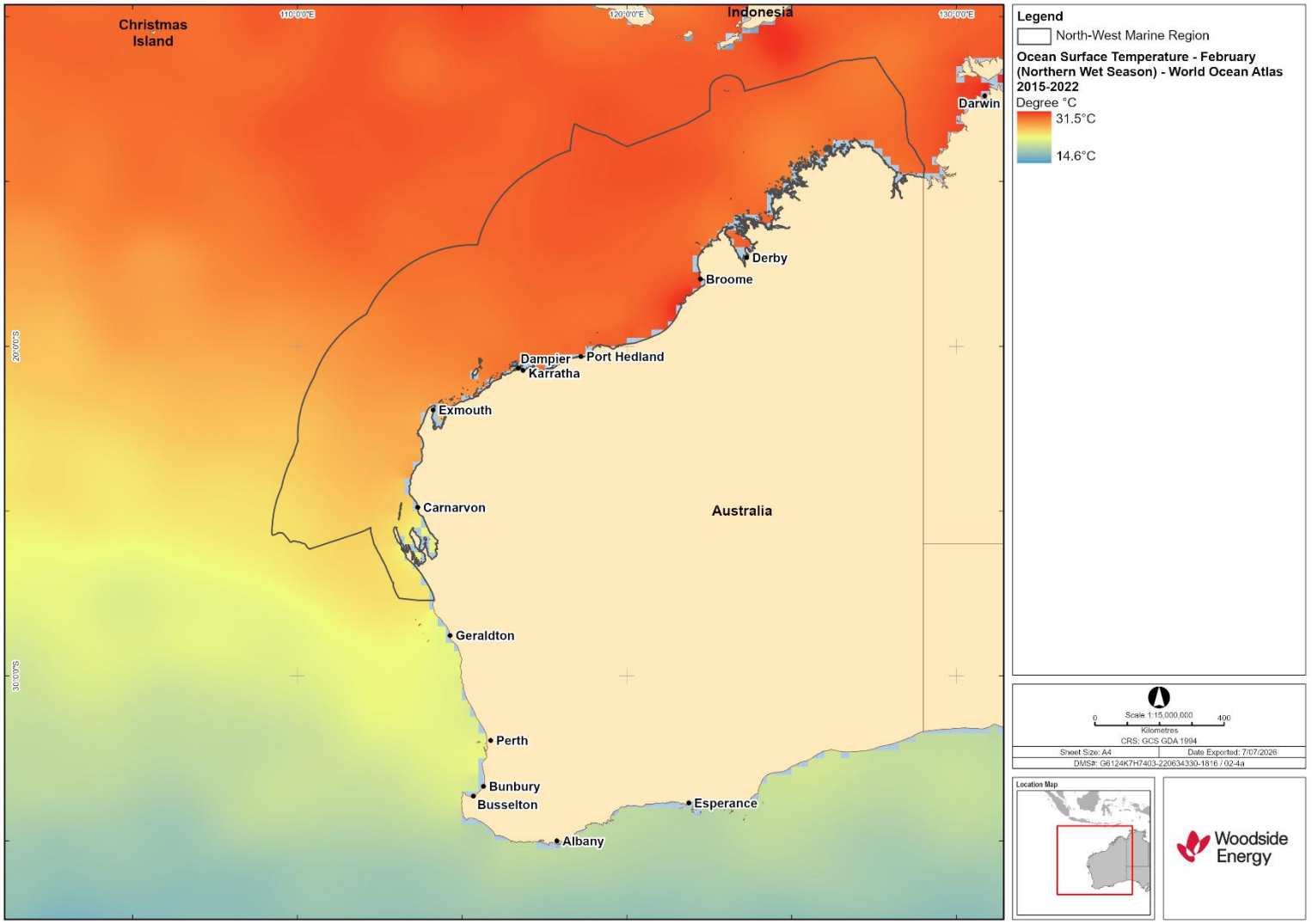


Figure 2-7: Ocean surface temperature for the NWMR – February, northern wet season

Source: Locarnini et al. *(2018), in World Ocean Atlas (2018)*

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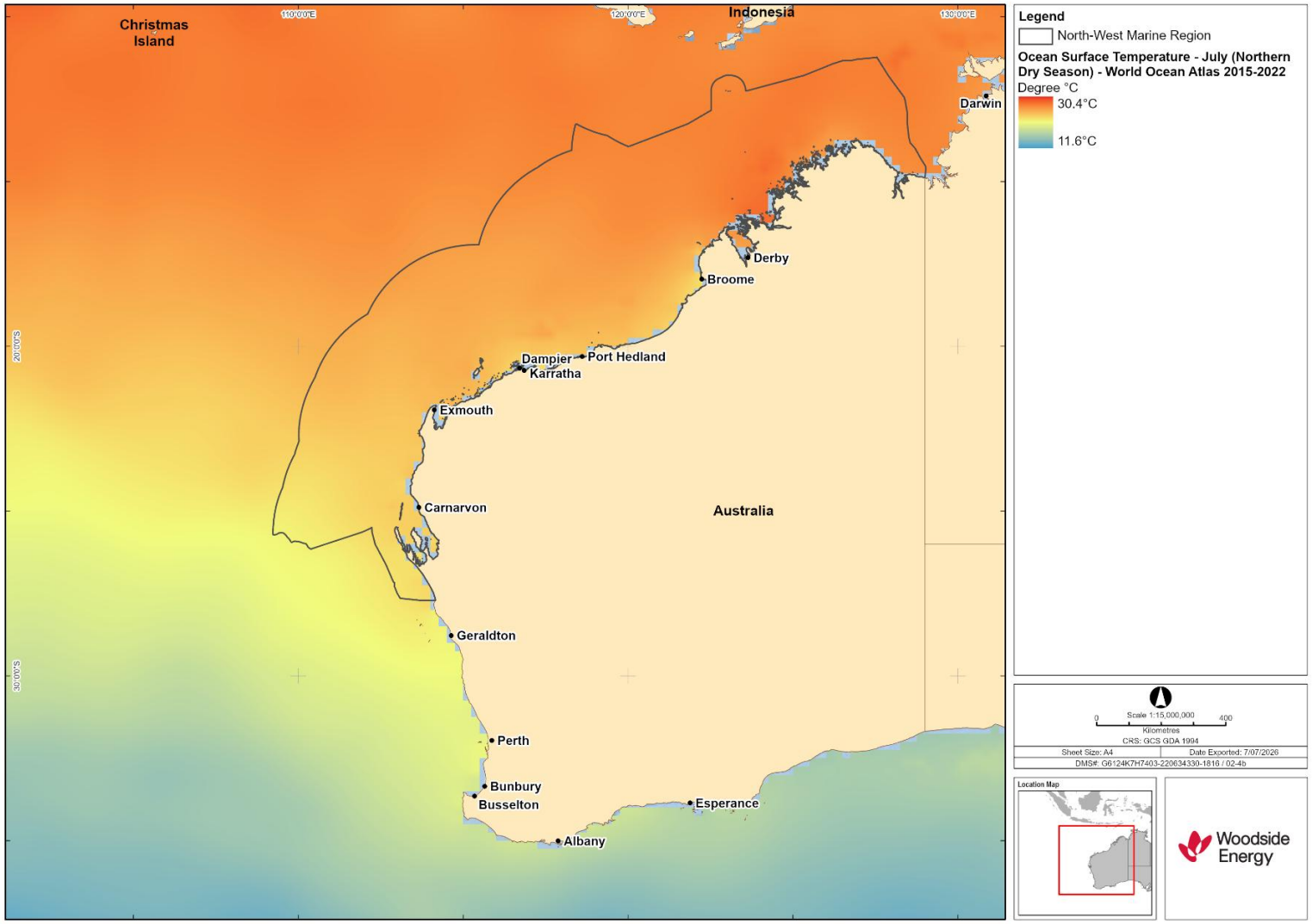


Figure 2-8: Ocean surface temperature for the NWMR – July, northern dry season

Source: Locarnini et al. *(2018), in World Ocean Atlas (2018)*

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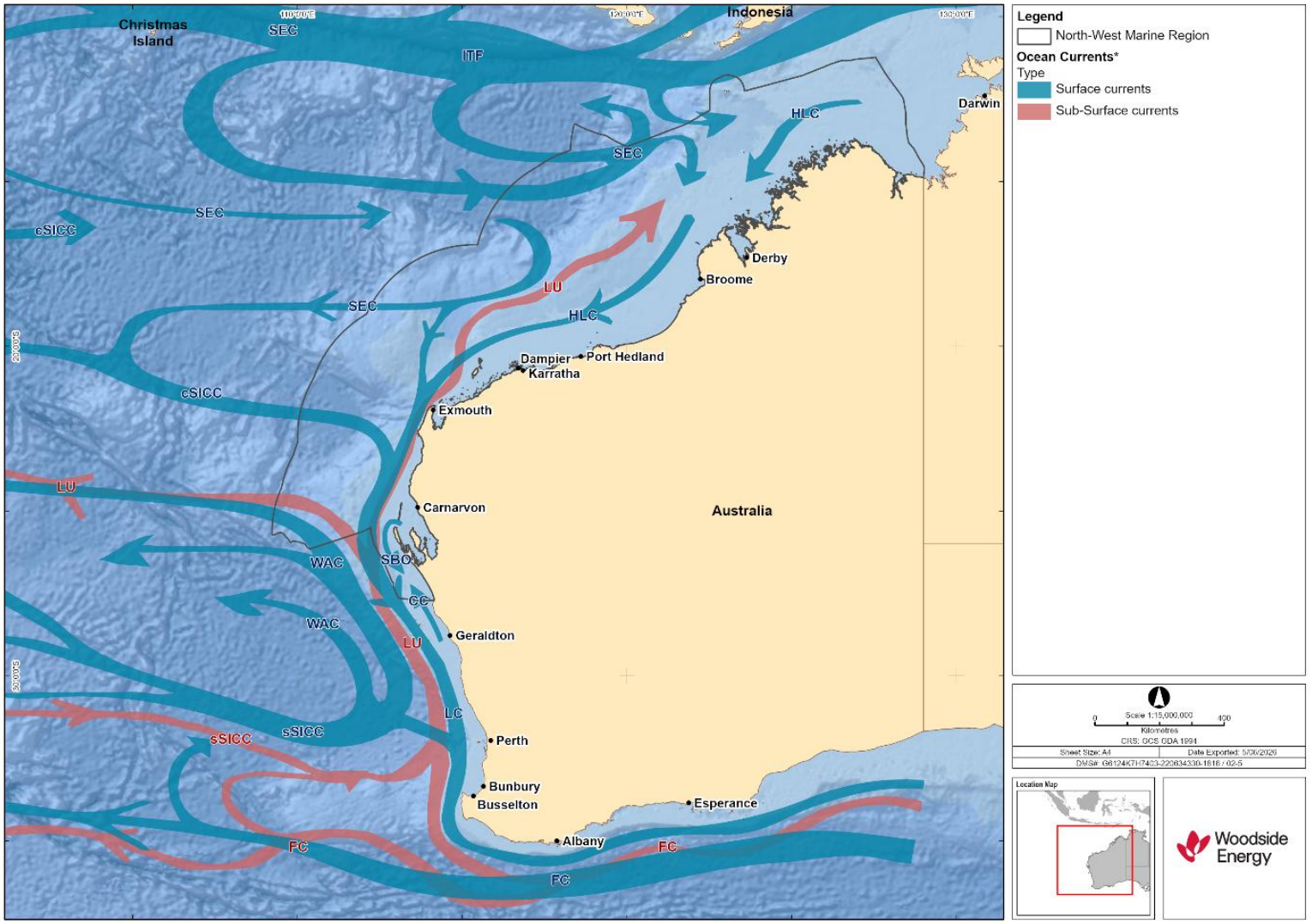


Figure 2-9: Ocean surface and sub-surface currents of the NWMR and wider region

Source: adopted from Wijeratne et al. *(2018)*

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2.3.1 Browse

Table 2-4 summarises the meteorological and oceanographic conditions for the Browse Basin, with supporting metocean data and figures provided in Appendix A.

Table 2-4: Summary meteorology and oceanography for Browse

Receptor	Description
Meteorology	
Seasonal patterns	The Browse area, overlapping the Kimberley marine system, experiences a tropical monsoon climate with moderate offshore cyclone activity (DEWHA 2007a). The region experiences two distinct seasons: the dry season from May to September and the northern wet season from October through to April. The wet season is Australia's peak time for tropical cyclones, rainfall and severe thunderstorms (BOM 2026c).
Air temperature	The mean annual air temperature recorded at Troughton Island between 1991 and 2020 ranged from 22.5ºC in July to 33.4ºC in November (BOM 2026c).
Rainfall	Mean rainfall recorded from Troughton Island in the Browse Basin between 1991 and 2020 ranged from a barely detectable (0.3 mm) mean monthly level in September to 274.8 mm in January (BOM 2026c).
Wind	The dry season experiences high-pressure systems that bring east to south-easterly winds with average wind speeds during the season of around 16.6 km/h and maximum wind gusts of 65 km/h. In contrast, the wet season brings predominantly westerly winds with average wind speeds about 17 km/h and maximum gusts exceeding 100 km/h (generally associated with tropical cyclones (MetOcean Engineers 2005).
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside, 2019). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.3.2 North West Shelf/Scarborough

Table 2-5 summarises the meteorological and oceanographic conditions for the NWS/Scarborough, with supporting metocean data and figures provided in Appendix B.

Table 2-5: Summary meteorology and oceanography for the North West Shelf and Scarborough

Receptor	Description
Meteorology	
Seasonal patterns	The NWS and Scarborough activity areas, overlapping the Pilbara marine system, experience a tropical arid climate with high cyclone activity. The monsoonal climate of the wider NWMR has a distinct wet and dry seasonal regime and transition periods between seasons (DEWHA 2007a).
Air temperature	Air temperatures as measured at the North Rankin A platform on the NWS ranged from a maximum average of 39.8°C in summer to a minimum average temperature of 15.2°C in winter (Woodside 2015).
Rainfall	Rainfall patterns annually reveal the wet season with highest rainfalls during the late summer, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall in the dry season is typically extremely low (Pearce *et al.* 2003 and Appendix B).
Wind	Winds are typically from the southwest during the wet season (summer) and tending from the south-east during the dry season (winter). The summer south-westerly winds are driven by high pressure cells that pass from west to east over the Australian continent. During the winter period, the relative position of the high-pressure cells shifts further north, leading to prevailing south-easterly winds from the mainland (Pearce *et al.* 2003 and Appendix B).

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Receptor	Description
Oceanography	
Currents	The large-scale ocean currents of the NWMR, primarily the Indonesian Throughflow and Leeuwin Current (and Holloway Current), are the primary influence on the NWS and Scarborough activity areas. The Indonesian Throughflow and Leeuwin Current are strongest during the late summer and winter and flow reversals to the north-east, typically short-lived and weak when there are strong south-westerly winds, can generate localised upwelling on the shelf edge (Holloway and Nye 1985; James *et al.* 2004; Condie *et al.* 2006).

2.3.3 North West Cape

Table 2-6 summarises the meteorological and oceanographic conditions for the North West Cape, with supporting metocean data and figures in Appendix B.

Table 2-6: Summary meteorology and oceanography for the North West Cape

Receptor	Description
Meteorology	
Seasonal patterns	The North West Cape activity area, overlapping the Ningaloo-Leeuwin marine system, experiences a subtropical arid climate featuring a hot summer season and a mild winter season. There are often distinct transition periods between the summer and winter regimes, characterised by periods of relatively low winds, with seasonal winds being the more dominant influence on the marine environment in the region (DEWHA 2007a).
Air temperature	The mean annual air temperature recorded at Learmonth Airport between 1991 and 2020 ranged from a maximum temperature of 38°C in January to a mean minimum temperature of 11.5°C in July (BOM 2026d).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn, The mean highest rainfall recorded from Learmonth Airport between 1991 and 2020 was 46.5 mm in June, and the lowest mean rainfall of 0.2 mm in October. These seasonal changes in rainfall are often associated with the passage of tropical low-pressure systems and cyclones (BOM 2026d).
Wind	Winds vary seasonally, generally from the south-west quadrant during summer months and the south-southeast quadrant during the autumn and winter months. The summer south-westerly winds are driven by high-pressure cells that pass from west to east over the Australian continent. Winds typically weaken and are more variable during the transitional period between the summer and winter seasons, generally between April to August.
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside 2022). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.4 Physical environment of the NWMR

Based on the Integrated Marine and Coastal Regionalisation of Australia Version 4.0, eight provincial bioregions occur within the NWMR, which are based on patterns of demersal fish diversity, benthic habitat and oceanographic data (Commonwealth of Australia 2006a) (Figure 2-10). Of the eight provincial bioregions that occur within the NWMR, these include four offshore (about 65% of total NWMR area) and four shelf (about 35% of total NWMR area) bioregions (Baker *et al.* 2008).

The NWMR is a tropical carbonate margin that comprises an extensive area of shelf, slope and abyssal plain/deep ocean floor, as well as complex areas of bathymetry such as plateau, terraces and major canyons (Harris *et al.* 2005). A series of reefs are on the outer shelf/slope of the NWMR, including Ashmore, Cartier, Scott and Seringapatam reefs (Baker *et al.* 2008). The distribution of seafloor geomorphic features has been systematically mapped over much of the Australian margin and adjacent seafloor. The mapped area can be divided into ten geomorphic regions, of which the NWMR overlays two: the Western Margin and Northern Margin (Harris *et al.* 2005). Most of the region consists of either continental slope (61%) or continental shelf (28%) (DEWHA 2007a), with more than 40% of the NWMR having a water depth less than 200 m. The shallow shelf is contrasted by features such as the Cuvier and Argo abyssal plains, which reach depths of

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more than 5 km. A unique feature of the region is the significant narrowing of the continental shelf around North West Cape (about 7 km wide) from the broad continental shelf in the north of the region (about 400 km wide at Joseph Bonaparte Gulf) (DEWHA 2007a) (Figure 2-11).

The geological history of the region, as well as its geomorphology and oceanography, has influenced the composition and distribution of sediments (DEWHA 2007a). The sedimentology of the NWMR is dominated by marine carbonates, which show a broad zoning and fining with water depth. Main trends of the NWMR sediments include a tropical carbonate shelf that is dominated by sand and gravel, an outer shelf/slope zone that is dominated by mud, and a relatively homogenous rise and abyssal plain/deep ocean floor that is dominated by non-carbonate mud (Baker *et al.* 2008) (Figure 2-12). In the region, mud content generally increases with water depth due to lower depositional energy, while grain-supported coral-rich sediments are more common on platform margins exposed to higher energy conditions (Gischler 2025). The distribution and resuspension of sediments on the inner shelf is strongly influenced by the strength of tides across the continental shelf as well as episodic events such as cyclones. Further offshore, on the mid to outer shelf and on the slope itself, sediment movement is primarily influenced by ocean currents and internal tides (DEWHA 2007a). In carbonate platform environments, similar to those of the NWMR, sediment redistribution can also be strongly affected by spur-and-groove systems, sand aprons and lagoonal circulation patterns, contributing to patchy and heterogeneous sediment facies across depth zones (Gischler 2025). This variation in bathymetry and interactions with oceanographic processes provides diverse habitats for marine fauna and flora within the NWMR.

2.5 Air quality

The ambient air quality of all three marine regions is largely unpolluted due to the extent of the open ocean area, the activities currently carried out in each, and the relative remoteness of each region.

Vessel traffic and existing offshore surface infrastructure are the only likely sources of pollutants in the marine region. Closer to the coast there may be localised and temporary reductions in air quality around areas of high vessel traffic, or due to the occurrence of dust storms and bushfires. International contributors to reduced air quality in the marine region may include ‘slash-and-burn’ agricultural methods and large forest fires in Southeast Asian regions (Vadrevu *et al.* 2014; Kim Oanh *et al.* 2018).

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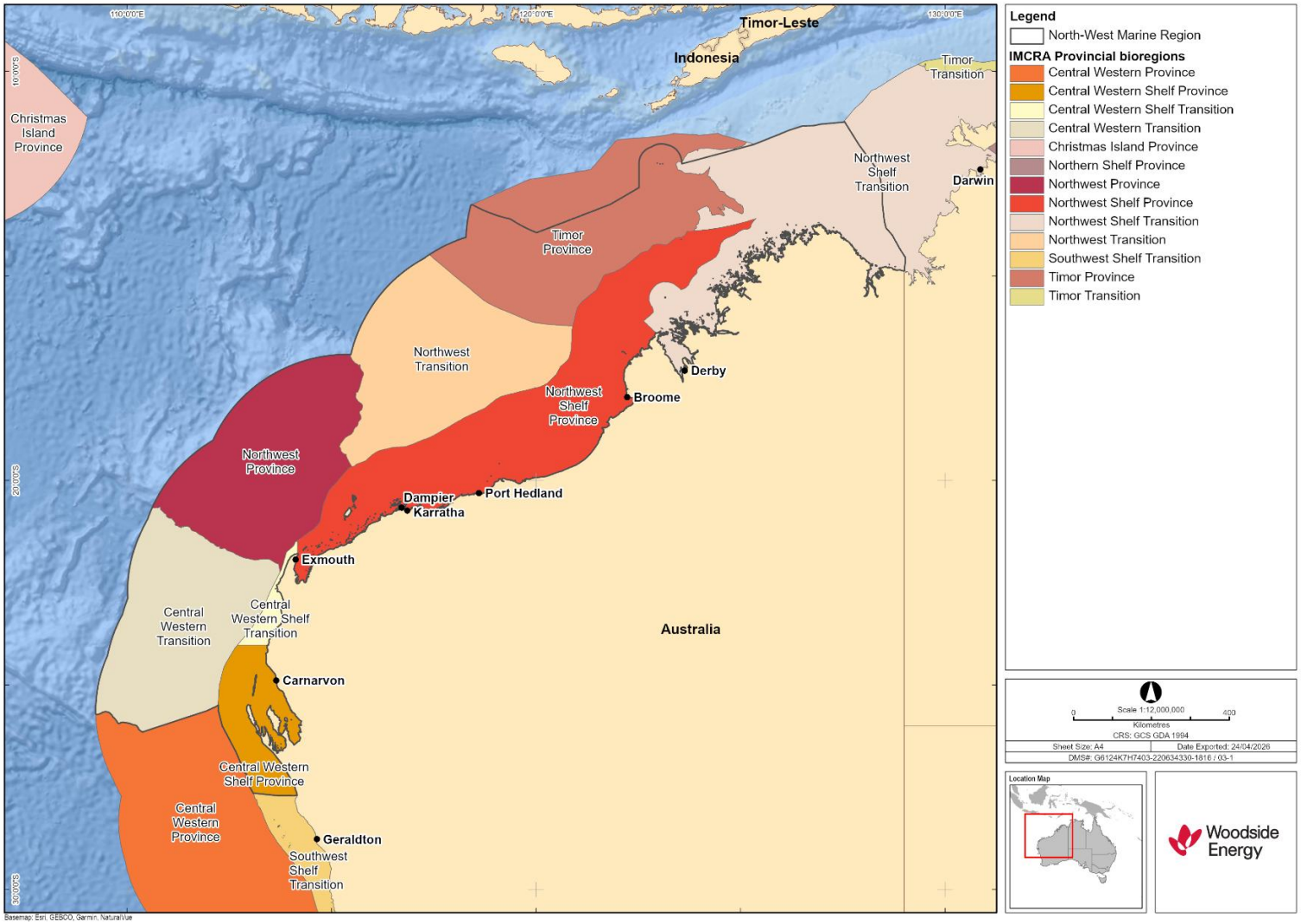


Figure 2-10: The eight provincial bioregions of the NWMR

Source: Geoscience Australia (2026), as per Integrated Marine and Coastal Regionalisation of Australia

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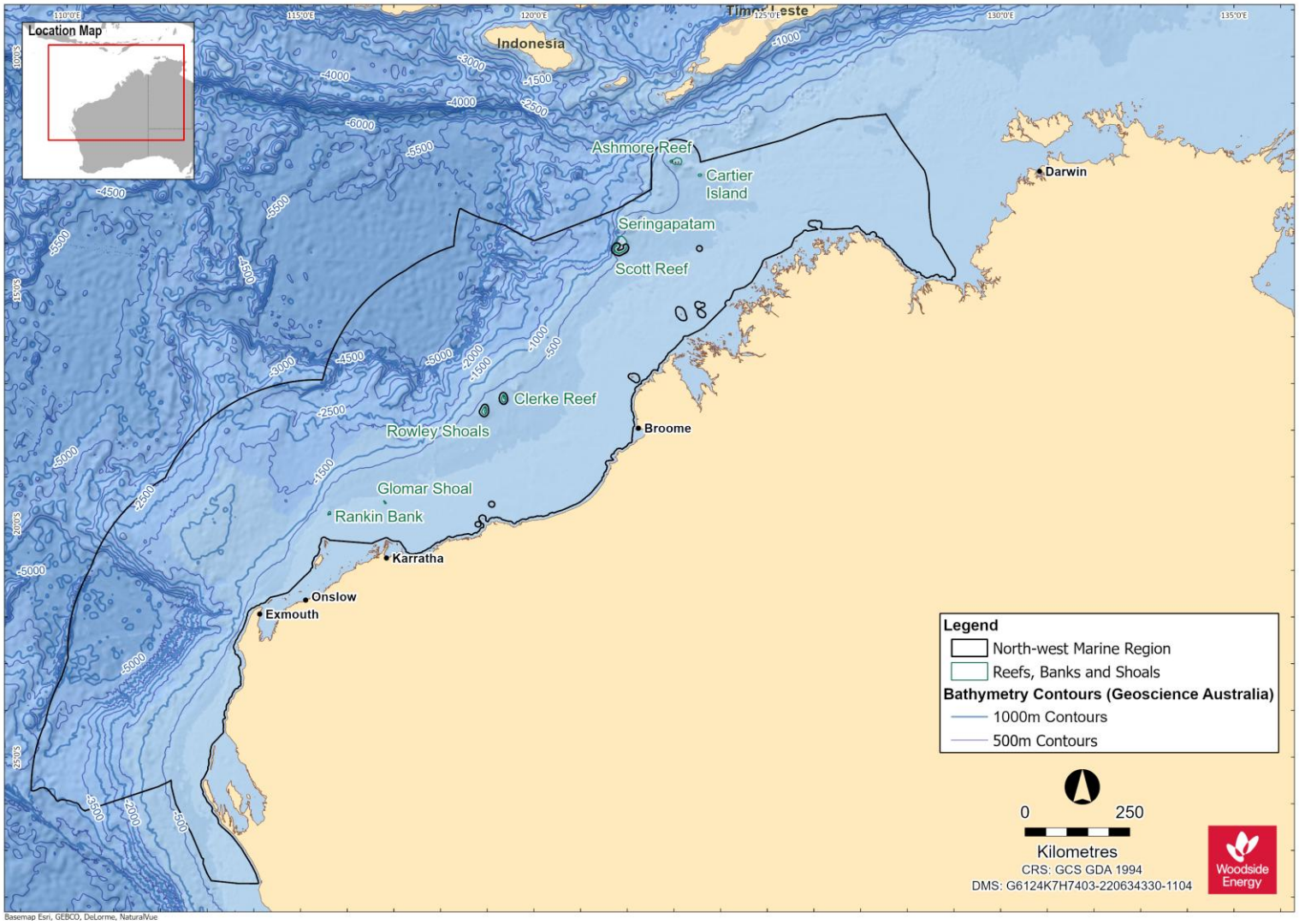


Figure 2-11: Bathymetry of the NWMR

Source: Geoscience Australia (2026)

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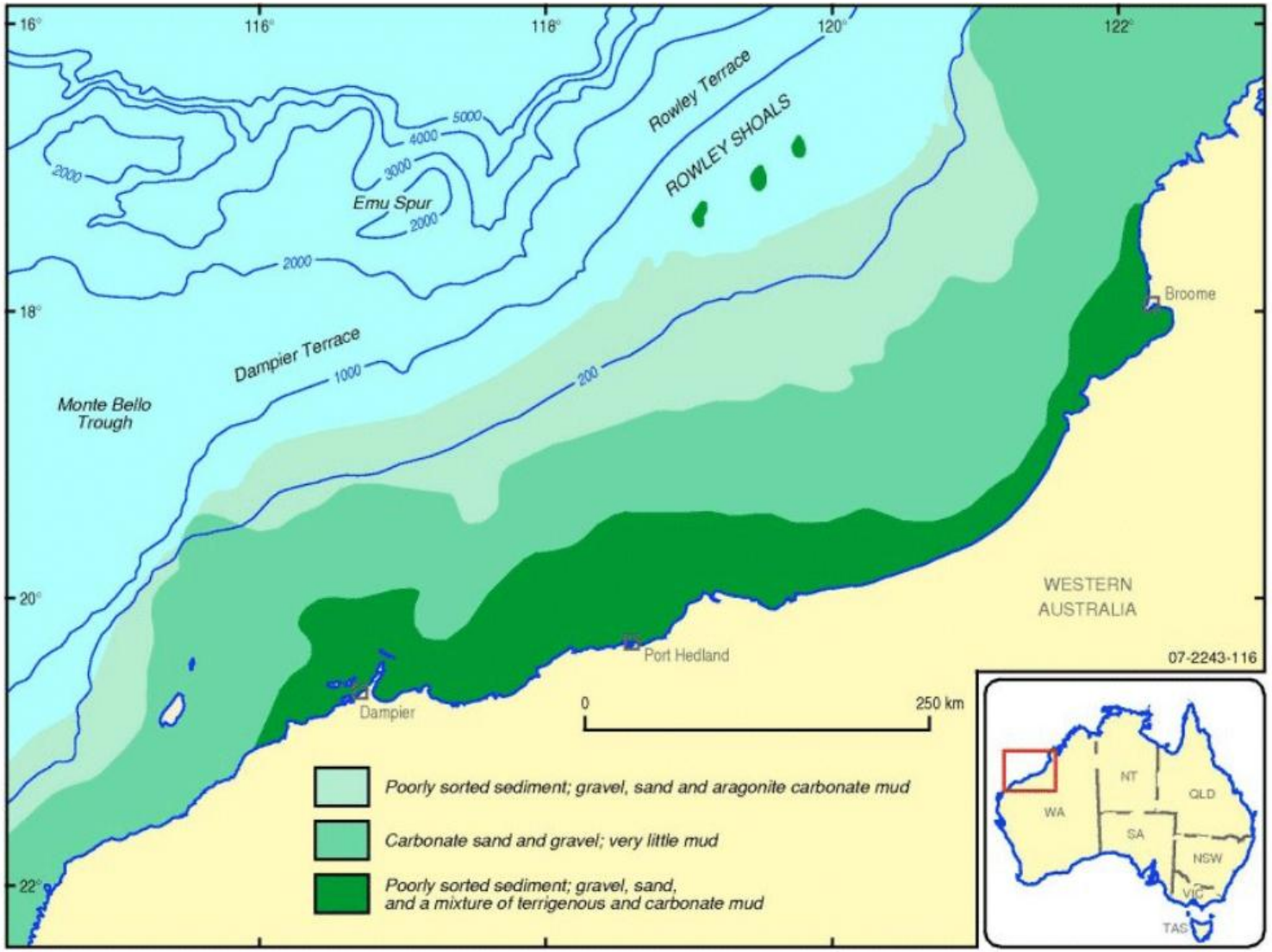


Figure 2-12: Overview of the seabed sediments of the NWMR

Source: Baker et al*. (2008)*

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3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

3.1 Summary of matters of national environmental significance

The EPBC Act refers to living things (including plants and animals), habitats and places that need protecting as 'matters of national environmental significance'. There are nine MNES listed under the EPBC Act:

- World Heritage areas
- National Heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and listed ecological communities
- listed migratory species (protected under international agreements)
- Commonwealth marine areas
- Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- water resources (relating to unconventional gas development and large coal mining development).

The EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance 2013 state that "An action is likely to have a significant impact on a threatened species if there is a real chance or possibility that it will: adversely affect habitat critical to the survival of a species." Habitat critical to the survival of a species is defined as areas necessary:

- for activities such as foraging, breeding, roosting or dispersal
- for the long-term maintenance of the species or ecological community, including the maintenance of species essential to the survival of the species or ecological community, such as pollinators
- to maintain genetic diversity and long-term evolutionary development, or
- for reintroducing populations or recovering the species or ecological community.

Habitat critical to the survival of species has been identified for marine turtles and marine mammals, and described in Sections 7.2.1.1 and 8.2.3, respectively.

This section summarises the MNES reported for the three bioregions: NWMR (Table 3-1), SWMR (Table 3-2) and NMR (Table 3-3). The summary is based on the PMST reports (Appendix A) and includes MNES that may occur within each bioregion.

The PMST uses a conservative, grid-based search methodology to determine the potential presence of MNES. For marine areas located more than 30 km offshore, this involves using 32 km × 32 km grid cells to identify spatial overlap with listed MNES. As a result, the PMST report (Appendix A) may identify MNES that do not directly intersect with the EMBA, including protected areas that have no coastal interface and terrestrial species. Accordingly, MNES identified in the PMST that are not associated with coastal environments, and species that do not rely on marine or shoreline habitats (for example, species with no marine foraging or life-cycle processes), have not been assessed further.

Additional information about these MNES for the NWMR, SWMR, and NMR is provided in subsequent sections (referenced in Table 3-1, Table 3-2 and Table 3-3, respectively).

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Table 3-1: Summary of matters of national environmental significance (MNES) identified by the EPBC Act Protected Matters Search Tool (PMST) within and potentially occurring within the NWMR

MNES	Number	Description	Section of this document
World Heritage properties	3	• Shark Bay • The Ningaloo Coast • Murujuga Cultural Landscape	Section 12 Section 13
National Heritage places	6	• Dampier Archipelago (including Burrup Peninsula) • Dirk Hartog Landing Site 1616 • Shark Bay • The Ningaloo Coast • The West Kimberley • HMAS Sydney II and HSK Kormoran Shipwreck Sites	Section 12
Wetlands of international importance (Ramsar)	4	• Ashmore Reef National Nature Reserve • Eighty Mile Beach • Ord River Floodplain • Roebuck Bay	Section 12
Commonwealth marine areas	5	• EEZ and Territorial Sea • Key ecological features (KEFs) • Australian Marine Parks (AMPs) • Australian Whale Sanctuary • Extended Continental Shelf	Section 12
Listed threatened ecological communities	2	• Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula • Subtropical and temperate coastal saltmarsh	Section 12
Listed threatened species	73	Refer NWMR PMST report (Appendix A)	Section 6 to Section 9
Listed migratory species	100	Refer NWMR PMST report (Appendix A)	Section 6 to Section 9

Table 3-2: Summary of MNES identified by the EPBC Act PMST within and potentially occurring within the SWMR

MNES	Number	Description	Section of this document
World Heritage properties	0	N/A	Appendix A
National Heritage places	4	• Batavia Shipwreck Site • Cheetup Rock Shelter • HMAS Sydney II and HSK Kormoran • Fitzgerald River National Park	Appendix A
Wetlands of international importance (Ramsar)	3	• Becher Point Wetlands • Peel-Yalgorup System • Vasse-Wonnerup System	Appendix A

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MNES	Number	Description	Section of this document
Commonwealth marine areas	5	• EEZ and Territorial Sea • KEFs • AMPs • Australian Whale Sanctuary • Extended Continental Shelf	Appendix A
Listed threatened ecological communities	7	• Banksia woodlands of the Swan Coastal Plain • Empodisma peatlands of southwestern Australia • Honey myrtle shrubland on limestone ridges of the Swan Coastal Plain bioregion • Proteaceae dominated kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia • Sedgelands in Holocene dune swales of the southern Swan Coastal Plain • Subtropical and temperate coastal saltmarsh • Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	Appendix A
Listed threatened species	65	Refer SWMR PMST report	Appendix A
Listed migratory species	85	Refer SWMR PMST report	Appendix A

Table 3-3: Summary of MNES identified by the EPBC Act PMST within and potentially occurring within the NMR

MNES	Number	Description	Section of this document
World Heritage properties	1	Kakadu National Park	Appendix A
National Heritage places	1	Kakadu National Park	Appendix A
Wetlands of international importance (Ramsar)	2	• Kakadu National Park • Coburg Peninsula	Appendix A
Commonwealth marine areas	5	• EEZ and Territorial Sea • KEFs • AMPs • Australian Whale Sanctuary • Extended Continental Shelf	Appendix A
Listed threatened ecological communities	0	N/A	N/A
Listed threatened species	46	Refer NMR PMST report	Appendix A
Listed migratory species	79	Refer NMR PMST report	Appendix A

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3.2 Part 13 statutory instruments for Environment Protection and Biodiversity Conservation Act listed threatened and migratory species in the NWMR, South-west Marine Region (SWMR) and North Marine Region (NMR)

A screening process was conducted to identify which EPBC Act listed threatened and migratory species, and associated Part 13 statutory instruments, are relevant in the context of assessing impacts and risks associated with petroleum activities in each of the Woodside activity areas. The screening criteria included:

- overlap among the Woodside activity areas with habitat critical for survival (such as marine turtles) and with BIAs (overlapping the marine environment) for any listed threatened or migratory species as reported in the PMST searches
- published literature, unpublished reports and credible anecdotal information (such as feedback from stakeholders) indicating species presence or occurrence within the Woodside activity areas
- temporal overlap between the likely timing of petroleum activities and peak periods for key critical life stage behaviours (for example, breeding, nesting, calving, resting, foraging, migration)
- environmental aspects associated with petroleum activities that have been identified as a key threat to a species in a Part 13 statutory instrument (such as anthropogenic noise, light emissions, marine debris).

Table 3-4 lists relevant EPBC Act threatened and migratory species and their Part 13 statutory instruments. For the full list of EPBC Act listed species for each marine bioregion, refer to the PMST reports (Appendix A).

Table 3-4: Summary of EPBC Act threatened and migratory species to be considered for evaluating impacts or risks for Woodside activities

Species	EPBC Act Part 13 statutory instrument
All vertebrate marine fauna	Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (Commonwealth of Australia 2018)
Fishes, sharks, rays and sawfishes	
All sawfishes (largetooth, green, dwarf, speartooth, narrow)	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015b)
Grey nurse shark (west coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (Department of the Environment (DoE) 2014a)
Largetooth sawfish	Conservation Advice for *Pristis pristis* (largetooth sawfish) (DCCEEW 2025a)
Little gulper shark, southern dogfish	Commonwealth Listing Advice on *Centrophorus zeehaani* (southern dogfish) (Threatened Species Scientific Committee 2013a)
Northern river shark	Conservation Advice for *Glyphis garricki* (northern river shark) (DoE 2014b)
Scalloped hammerhead	Listing Advice for *Sphyrna lewini* (scalloped hammerhead) (Threatened Species Scientific Committee 2024)
Speartooth shark	Approved Conservation Advice for *Glyphis glyphis* (speartooth shark) (DoE 2014c)
White shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) 2013 (DSEWPaC 2013b)
Whale shark	Conservation Advice *Rhincodon typus* whale shark (Threatened Species Scientific Committee 2015d)
Marine reptiles	
All marine turtle species (loggerhead, green, leatherback, hawksbill, flatback, olive ridley)	Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW 2023j)
Dusky sea snake	Conservation Advice for *Aipysurus fuscus* (dusky sea snake) (DCCEEW 2024m)
Leaf-scaled sea snake	Approved Conservation Advice for *Aipysurus foliosquama* (leaf-scaled sea snake) (DSEWPaC 2011b)
Leatherback turtle	Approved Conservation Advice for *Dermochelys coriacea* (*leatherback turtle*) (DEWHA 2009c)

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Species	EPBC Act Part 13 statutory instrument
Mertens' water monitor	Conservation Advice for *Varanus mertensi* (Mertens' water monitor) (DCCEEW 2023i)
Mitchell's water monitor	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW 2023c)
Short-nosed sea snake	Approved Conservation Advice for *Aipysurus apraefrontalis* (short-nosed sea snake) (DSEWPaC 2011a)
Marine mammals	
Australian sea lion	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPaC 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee 2020) (in effect under the EPBC Act from 23 December 2020)
Australian snubfin dolphin	Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW 2025d)
Blue whale	Conservation Management Plan for the Blue Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015–2025 (Commonwealth of Australia 2015a)
Fin whale	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee 2015c)
Humpback whale	Listing Advice *Megaptera novaeangliae* Humpback Whale (Department of Agriculture, Water and the Environment (DAWE) 2022)
Indo-Pacific humpback dolphin (Australian humpback dolphin)	Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW 2025e)
Sei whale	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee 2015a)
Southern right whale	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW 2024a)
Seabirds	
All seabird species	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW 2023j)
All albatrosses and petrels	National Recovery Plan for albatrosses and petrels (DCCEEW 2022)
Amsterdam albatross	EPBC Act Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (Commonwealth of Australia 2018)
Australian fairy tern	National Recovery Plan for the Australian Fairy Tern *Sternula nereis nereis* (Commonwealth of Australia 2020) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (Department of Environment and Energy (DoEE) 2018)
Australian lesser noddy	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee 2015e) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 hectares (ha) (DEWHA 2009a)
Bridled tern	EPBC Act Threat abatement plan for predation by the European red fox (DEWHA 2008b)
Brown booby	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)
Christmas Island white-tailed tropic bird	Conservation Advice for *Phaethon lepturus fulvus* (golden bosun) (DCCEEW 2026f)

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Species	EPBC Act Part 13 statutory instrument
Flesh-footed shearwater	EPBC Act Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (Commonwealth of Australia 2018) EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024) EPBC Act Threat abatement plan for predation by the European red fox (DEWHA 2008b) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)
Little tern	Conservation Advice for *Sternula albifrons* (little tern) (DCCEEW 2025c)
Little shearwater	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Masked booby	EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Sooty tern	
Soft-plumaged petrel	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee 2015f)
Wedge-tailed shearwater	EPBC Act Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (Commonwealth of Australia 2018) EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024) EPBC Act Threat Abatement Plan for predation by the European red fox (DEWHA 2008b) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)
Wilson's storm petrel	EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Common noddy	EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024)
Caspian tern	
Greater crested tern	
Lesser frigatebird	
Streaked shearwater	
White-tailed tropicbird	
Red-tailed tropicbird (Indian Ocean)	Conservation Advice for *Phaethon rubricauda westralis* (Indian Ocean red-tailed tropicbird) (DCCEEW 2023h)
Shorebirds	
All migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia 2015c) EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (DCCEEW 2023j)
Asian dowitcher	Conservation Advice for *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW 2024h)
Australian painted snipe	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee 2013b)
Bar-tailed godwit (menzbieri)	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (DCCEEW 2024c)
Black-tailed godwit	Conservation Advice for *Limosa limosa* Black-tailed godwit (DCCEEW 2024f)

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Species	EPBC Act Part 13 statutory instrument
Common greenshank	Conservation Advice for *Tringa nebularia* (common greenshank) (DCCEEW 2024g)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* Curlew sandpiper (DCCEEW 2023e)
Eastern curlew	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEEW 2023d)
Great knot	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW 2024e)
Greater sand plover	Conservation Advice *Charadrius leschenaultia* Greater sand plover (DCCEEW 2023f)
Grey plover	Conservation Advice for *Pluvialis squatarola* (grey plover) (DCCEEW 2024l)
Lesser sand plover	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee, 2016)
Little curlew	EPBC Act Threat Abatement Plan for predation by the European red fox (DEWHA 2008b)
Pacific golden plover	EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024)
Red-necked stint	
Red knot	Conservation Advice *Calidris canutus* Red knot (DCCEEW 2024d)
Ruddy turnstone	Conservation Advice for *Arenaria interpres* (ruddy turnstone) (DCCEEW 2024i)
Sharp-tailed sandpiper	Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW 2024j)
Terek sandpiper	Conservation Advice for *Xenus cinereus* (terek sandpiper) (DCCEEW 2024k)

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4. BIOLOGICAL COMMUNITIES

4.1 Regional context

The NWMR is characterised by shallow-water tropical marine ecosystems and features high species richness. The southern extent of the NWMR transitions between tropical and temperate waters and includes some species that are found in the SWMR. High diversity is driven by the interaction with seafloor features in addition to the currents in the NWMR, which support unique ecosystems and trophic interactions. The strong seasonality in wind direction and rainfall is another key driver on the ecological processes in the region. The weakening of the Indonesian Throughflow and Leeuwin Current in the dry season, along with the seasonal wind reversal and cyclones, drives biological productivity by mixing deeper, cold nutrient-rich waters with the surface waters (DSEWPaC 2012a).

The SWMR has high biodiversity and a high number of species endemic to the region. Factors that contribute to the high level of biodiversity and endemism in the region include the long stable period of geological oscillation, persistent high energy environment, warm-water intrusion by the Leeuwin Current, and areas in the east of the SWMR where cold nutrient-rich waters rise from the deep ocean to the surface. The low-nutrient environment of the SWMR leads to clear waters and high levels of light penetration, giving rise to a high diversity of seagrass, algal and benthic communities. Biological productivity of the SWMR is low in global standards in comparison to other Australian marine regions due to the low-nutrient tropical waters carried south by the Leeuwin Current, and its effect in supressing the upwelling of deeper nutrient-rich cold waters, in addition to the absence of nutrient runoff from significant rivers. Small seasonal upwellings occur regularly at known locations and, because of the overall absence of nutrients in the region, these productivity locations have a disproportionate effect on the region's ecosystems. These eddies can be either upwelling, which enhances local biological productivity where they form, or downwelling, which concentrates and transports communities away from the coast (DSEWPaC 2012b).

The NMR is known for its high diversity of tropical species but relatively low endemism. The high diversity and low endemism are thought to be due to the vast species-rich biogeographic ocean zone that stretches from the western Pacific to the east coast of Africa, and is thought to have few physical barriers for species dispersal. Most of the NMR endemic species do not have a long-lived pelagic larval stage, which promotes long-distance travel across deeper waters. The NMR is primarily influenced by tidal flows rather than ocean currents. Tidal movement in the region is complex due to the barrier of islands and submerged reefs in the Torres Strait, which hinder tidal energy. The Indonesian Throughflow and surface-driven currents in the region are likely to influence nutrients, pelagic dispersal, and species and biological productivity in the NMR (DSEWPaC 2012c).

4.2 Biological productivity of the NWMR

Primary productivity of the NWMR is generally low and appears to be largely driven by offshore influences (Brewer *et al.* 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. Seasonal weather patterns also influence the delivery of nutrients from deep water to shallow water (Brewer *et al.* 2007). Cyclones and north-westerly winds during the north-west wet season (Brewer *et al.* 2007) (around October to April (BOM 2026a)) facilitate the upwelling and mixing of nutrients from deepwater to shallow water environments (Brewer *et al.* 2007).

The Indonesian Throughflow has an important effect on productivity in the northern areas of the region. Generally, its deep, warm and low-nutrient waters suppress upwelling of deeper comparatively nutrient-rich waters, thereby forcing the highest rates of primary productivity to occur at depths associated with the thermocline. When the Indonesian Throughflow is weaker the thermocline lifts, bringing deeper, more nutrient-rich waters into the photic zone and resulting in conditions favourable to increased productivity (DEWHA 2007a). Similarly, the Leeuwin Current has a significant role in determining primary productivity in the southern areas of the NWMR. As with the Indonesian Throughflow, the overlying warm oligotrophic waters of the Leeuwin Current suppress upwelling. A subsurface chlorophyll maximum is therefore formed at a depth in the water column where nutrients and light are sufficient for photosynthesis to proceed. Seasonal changes in the strength of the Leeuwin Current influence primary productivity levels, and seasonal interactions between the Leeuwin and Ningaloo currents in the south of the NWMR are believed to be particularly important (DEWHA 2007a).

Internal tides (defined as internal waves generated by the barotropic tide) are a striking characteristic of many parts of the NWMR and are associated with highly stratified water columns. Internal waves (solitons), which can raise cooler, generally more nutrient-rich water higher in the water column, are generated between

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water depths of 400 m and 1,000 m where bottom topography results in a significant change in water depth over a relatively short distance. Cyclones are episodic events in the NWMR that contribute to spikes in productivity through enrichment of surface water layers, due to enhanced vertical mixing of the water column. Temporary increases in primary productivity caused by cyclones generally last between one and two weeks, and it is believed the impacts of cyclones are generally limited to waters less than 100 m deep and affect benthic communities more substantially than pelagic systems (DEWHA 2007a).

Water depth also has a significant overriding influence over productivity in the marine environment, due to its influence on light availability. This is reflected by distinct onshore and offshore assemblages of major pelagic groups of phytoplankton, microzooplankton, mesoplankton and ichthyoplankton. Productivity booms are thought to be triggered by seasonal changes to physical drivers or episodic events, as detailed above, which result in rapid increases in primary production over short periods, followed by extended periods of lower primary production. The trophic systems in the NWMR can take advantage of blooms in primary production, enabling nutrients generated to be used by different groups of consumers over long periods (DEWHA 2007a).

Little detailed information is available about the trophic systems in the NWMR. The use of available nutrients is thought to differ between pelagic and benthic environments, influenced by water depth and vertical migration of some species groups in the water column. In the pelagic system, it is thought about half of the nutrients available are used by microzooplankton (such as protozoa), with the remainder going to macro and meso-zooplankton (such as copepods). As primary and secondary consumers, gelatinous zooplankton (such as salps and coelenterates) and jellyfish are thought to play an important role in the food web, contributing a significant proportion of biomass in the marine system during and for periods after booms in primary productivity. Salps are semi-transparent, barrel-shaped marine animals that can reproduce quickly in response to bursts in primary productivity and provide a food source for many pelagic fish species (DEWHA 2007a).

4.3 Planktonic communities in the NWMR

The NWMR has two distinct phytoplankton assemblages – a tropical oceanic community in offshore waters and a tropical shelf community confined to the NWS (Hallegraeff 1995). MODIS (moderate resolution imaging spectrometer) satellite datasets from the NWMR indicates chlorophyll (and thus phytoplankton) levels are low in summer months (December to March) and higher in winter months (Schroeder *et al.* 2009). Low chlorophyll levels during summer months may be a result of lower plankton productivity during the wet season or lower nutrient inputs from warm surface waters dominant during summer. However, it is likely much of the primary production is taking place below the surface, where the MODIS imagery does not penetrate (Schroeder *et al.* 2009). The winter months are relatively cloud free and surface chlorophyll is high throughout most of the region.

Zooplankton may include organisms that complete their life cycle as plankton (such as copepods, euphausiids) and as larval stages of other taxa, such as fishes, corals and molluscs. Peaks in zooplankton, such as mass coral spawning events (typically in March and April) (Rosser and Gilmour 2008) and fish larvae abundance (Department of Conservation and Land Management (CALM) 2005a), can occur throughout the year.

Spatial and temporal patterns in the distribution and abundance of macro-zooplankton on the NWS are influenced by sporadic climatic and oceanographic events, with large inter-annual changes in assemblages (Wilson *et al.* 2003). Amphipods, euphausiids, copepods, mysids and cumaceans are among the most common components of the zooplankton in the region (Wilson *et al.* 2003). Buenafe *et al.* (2025) analysed near-global larval distribution data for 15 taxa of large pelagic fishes and used habitat-suitability models to infer broad-scale spawning patterns, including for key species of management relevance such as skipjack tuna (*Katsuwonus pelamis*), southern bluefin tuna (*Thunnus maccoyii*), other tropical and subtropical tunas (*Thunnus* spp.), and billfishes (such as marlins and swordfish). The study identified consistent seasonal and regional structure in spawning, with modelled spawning habitat for several of these species occurring off northwest Australia, particularly during the wetter months in spring and summer. This overlap suggests the oceanographic conditions in parts of the NWMR are favourable for early life stages and reproduction of large pelagic fishes (Buenafe *et al*. 2025).

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4.3.1 Browse

Phytoplankton within the Browse activity area is expected to reflect the conditions of the NWMR. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (such as bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson *et al.* 2007). Communities of phytoplankton in oligotrophic tropical waters, such as those around Scott Reef, are usually dominated by picoplankton. Particularly, the marine cyanobacteria genera Prochlorococcus and Synechococcus (Brinkman *et al.* 2009a). Estimates of the phytoplankton biomass (measured as chlorophyll a) near Scott Reef are about twice that of open waters (sampled more than 50 km south-west of South Scott Reef). The open water location sampled is likely to be representative of the general outer shelf pelagic environment, and so is representative of the oceanic waters of the area. This difference is considered to most likely reflect the enhanced vertical mixing of nutrients into the surface layer around Scott Reef through interactions between the local hydrodynamics and the local topography (Brinkman *et al.* 2009a).

Zooplankton within the activity area may include organisms that complete their life cycle as plankton and as larval stages of other taxa, such as fishes, corals and molluscs. Peaks in zooplankton, such as mass coral spawning events (typically in March and April) (Rosser and Gilmour 2008; Simpson *et al.* 1993) and fish larvae abundance (CALM 2005a), can occur throughout the year.

The influence of the Indonesian Throughflow restricts upwelling across the Kimberley System (roughly equates to the Browse activity area) (Sutton *et al.* 2019). However, small-scale topographically associated current movements, tidal pumping, eddies and upwellings are thought to occur, which transport cooler, nutrient-rich water to specific locations, including reefs and shallow ecosystems, which result in ‘productivity hotspots’ (Sutton *et al.* 2019; Green *et al.* 2019). Similarly, internal waves, generated at the shelf break (for example, west of Browse Island and around submerged cliffs located at the continental shelf edge) play a role in making nutrients available in the photic zone. Productivity within shallow nearshore waters is driven primarily by tidal movement and terrestrial runoff, whereby nutrients are mixed by tidal action and new inputs of organic matter come from the land (Sutton *et al.* 2019).

4.3.2 North West Shelf/Scarborough

Plankton communities within the NWS/Scarborough activity area are expected to reflect conditions of the NWMR.

Internal tides along the NWS and Exmouth Plateau draw deeper cooler waters into the photic zone, stir up nutrients and trigger primary productivity. Broadly, the greatest productivity within this subsystem is found around the 200 m isobath associated with the shelf break (Brewer *et al.* 2007). Overall, productivity across the NWS is maintained through strong nutrient recycling and offshore inputs. Cyanobacteria are an important primary producer in the region, with other primary producers such as diatoms increasing in abundance during nutrient influxes in the area. Along the Pilbara coast and Dampier Archipelago, mean levels of chlorophyll and nutrients are locally elevated, suggesting a high level of primary producer productivity in these areas. Inshore waters of the Pilbara coast and Dampier Archipelago feature high turbidity, strong tidal activity, and detritus inputs that increase primary productivity in the region (Brewer *et al.* 2007).

4.3.3 North West Cape

Waters of the North West Cape experience a relatively high diversity of phytoplankton groups including diatoms, coccolithophorids and dinoflagellates. During the warmer months blooms of *Trichodesmium* occur in the region, these have been observed particularly on the frontal systems around Point Murat (Heyward *et al.* 2000).

Average Leeuwin Current phytoplankton biomass is characteristic of low productivity oceanic waters like the Indian, Pacific and Atlantic Oceans (Hanson *et al.* 2005). However, the Canyons linking the Cuvier Abyssal Plain and Cape Range Peninsula KEF are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf (Brewer *et al.* 2007). These waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads (Brewer *et al.* 2007). The narrow shelf width (about 10 km) near the canyons facilitates nutrient upwelling and relatively high productivity. This high primary productivity leads to high densities of primary consumers such as micro and macro-zooplankton, such as amphipods, copepods, mysids, cumaceans, euphausiids (Brewer *et al.* 2007).

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5. BENTHIC COMMUNITIES AND HABITATS

5.1 Regional context

The NWMR habitats range from nearshore benthic primary producer habitats, such as seagrass beds, coral communities and mangrove forests, to offshore soft sediment seabed habitats and submerged and emergent reef systems. These habitats support biological communities that range from low density sessile and mobile benthos, such as sponges, molluscs and echinoids (with noted areas of sponge hotspot diversity) in offshore soft sediment habitat (DSEWPaC 2012a) to complex, diverse, remote coral reef systems.

Benthic primary producer habitats, such as seagrass beds, coral communities and mangrove forests within the SWMR, are described as a mixture of tropical and temperate species, due to the seasonal influences of the tropical waters carried south by the Leeuwin Current and the temperate waters carried north by the Capes Current (DSEWPaC 2012b).

The NMR shares similar habitat types to the NWMR. The predominant habitat of the region includes soft muddy sediments on relatively flat terrain. Other habitat types include seagrasses, reefs, shoals, and coastal habitats such as mangroves and coastal wetlands (Rochester *et al.* 2007).

Table 5-1, Table 5-2 and Table 5-3 summarise the benthic communities and habitats that are representative of the broader NWMR, SWMR and NMR, respectively. While the next subsections are focused on the primary features of relevance to the activity areas within the NWMR, mainly the offshore habitats of the continental shelf and slope, submerged shoals and banks, and remote oceanic reef systems that are of recognised conservation value.

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Table 5-1: Benthic communities and habitats within the NWMR

Habitat/community	Kimberley	Pilbara	Ningaloo-Leeuwin
Offshore habitats and biological communities			
Soft sediment with infauna	The offshore environment of the NWMR comprises predominantly of seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota. The benthic communities inhabiting the predominantly soft, fine sediments of the offshore habitats are characterised by infauna such as polychaetes, and sessile and mobile epifauna such as crustacea (shrimp, crabs and squat lobsters) and echinoderms (starfish, cucumbers). The density of benthic fauna is typically lower in deep-sea sediment habitats (greater than 200 m) than in shallower coastal sediment habitats, but the diversity of communities may be similar.		
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope and escarpments. This habitat is found in offshore areas of the NWMR, often associated with KEFs such as the Ancient Coastline at 125 m Depth Contour KEF.		
	• Ancient coastline at 125 m depth contour KEF • Continental slope demersal fish communities KEF	• Ancient coastline at 125 m depth contour KEF • Continental slope demersal fish communities KEF	• Ancient coastline at 125 m depth contour KEF • Continental slope demersal fish communities KEF
Coral reef	Coral reef habitats within the NWMR have a high species diversity that includes corals, and associated reef species such as fishes, crustaceans, invertebrates and algae. Coral reef habitats of the offshore environment of the NWMR include remote oceanic reef systems, large platform reefs,and submerged banks and shoals.		
	• Browse Island • Scott Reef • Seringapatam Reef • Ashmore Reef • Cartier Island • Hibernia Reef • Rowley Shoals (including Mermaid Reef, Clerke Reef, Imperieuse Reef)	• Glomar Shoal • Rankin Bank • Montebello, Lowendal and Barrow Island groups	N/A
Seagrass and macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and provide key habitats and nursery grounds (Heck *et al.* 2003; Wilson *et al.* 2010). In the northern half of WA, these habitats are restricted to sheltered and shallow waters, including around offshore reef systems, due to large tidal movement, high turbidity, cyclones and large seasonal freshwater runoff.		
	• Scott Reef, Seringapatam Reef, Ashmore Reef • Rowley Shoals (including Mermaid Reef, Clerke Reef, Imperieuse Reef)	Montebello, Lowendal and Barrow Island groups	N/A

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Habitat/community	Kimberley	Pilbara	Ningaloo-Leeuwin
Filter feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA 2008a). Filter feeders generally live in areas that have strong currents and hard substratum, often associated with deeper environments of the shoals and banks in the offshore NWMR.		
	Lower outer reef slopes of the oceanic reef systems such as Scott Reef	• Glomar Shoal • Rankin Bank • Ancient coastline at 125 m depth contour KEF	Cape Range canyon system
Sandy beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors such as waves and currents. Sandy beaches vary in length, width and gradient, and in sediment type, composition and grain size throughout the NWMR, being found around islands and reefs in the offshore areas of the region.		
	• Browse Island • Scott Reef (Sandy Islet) • Ashmore Reef • Cartier Island	Montebello, Lowendal and Barrow Island groups	N/A
Nearshore/coastal habitats and biological communities			
Coral reef	Coral reef habitats typically found in nearshore regions of the NWMR include the fringing reefs around coastal islands and the mainland shore.		
	• Kimberley • East Holothuria and Long reefs • Bonaparte and Buccaneer Archipelagos • Montgomery Reef • Adele Complex (Beagle, Mavis, Albert, Churchill reefs, Adele Island)	• Dampier Archipelago • Inshore Pilbara Islands (Northern, Middle and Southern)	• Ningaloo Reef • Muiron Islands • Exmouth Gulf • Shark Bay
Seagrass and macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and provide key habitats and nursery grounds (Heck Jr. *et al.* 2003; Wilson *et al.* 2010). In the nearshore areas of the NWMR, these habitats are restricted to sheltered and shallow waters due to large tidal movement, high turbidity, cyclones and large seasonal freshwater runoff. These areas include in bays and sounds and around reef and island groups.		
	King Sound	• Roebuck Bay • Dampier Archipelago	• Ningaloo Reef • Exmouth Gulf • Shark Bay

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Habitat/community	Kimberley	Pilbara	Ningaloo-Leeuwin
Filter feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA 2007a). Filter feeders generally live in areas that have strong currents and hard substratum. Conversely, higher diversity infauna is mainly associated with soft unconsolidated sediment, and infauna communities are considered widespread and well represented along the continental shelf and upper slopes of the NWMR. In nearshore areas of the NWMR, these species are generally found around reef systems.		
	• Scott Reef • Rowley Shoals	Deeper habitats of Rankin Bank and Glomar Shoal	Deeper habitats of Ningaloo Reef and the protected sponge zone in the south
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie *et al.* 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie *et al.* 2006). In regions like the NWMR, mangroves can frequently occur at their physiological limits due to the high temperatures, hypersaline conditions and low humidity. Their condition can fluctuate with climate, with periods of increased rainfall supporting improved growth and dispersal. Mapping of the Pilbara coastline shows mangroves form a relatively stable component of a broader intertidal environment, occupying about 16% of the intertidal zone over the past two decades, and functioning as an important ecological connector between adjacent saltmarshes, cyanobacterial mats and subtidal habitats (Hickey *et al.* 2025). Mangroves are confined to shoreline habitats, in nearshore areas of the NWMR.		
	Dampier Peninsula (including Carnot Bay, Beagle Bay and Pender Bay)	• Pilbara coastline (including Ashburton River Delta, Coolgra Point, Robe River Delta, Yardie Landing, Yammadery Island and the Mangrove Islands) • Montebello, Lowendal and Barrow Island groups • Roebuck Bay	• Shark Bay • Mangrove Bay, Cape Range Peninsula • Exmouth Gulf
Saltmarshes	Saltmarsh communities are confined to shoreline habitats and are typically dominated by dense stands of halophytic plants such as herbs, grasses and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments are generally sandy silts and clays and can often have high organic material content.		
	N/A	• Eighty Mile Beach • Roebuck Bay	Shark Bay

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Habitat/community	Kimberley	Pilbara	Ningaloo-Leeuwin
Sandy beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors such as waves and currents. Sandy beaches vary in length, width and gradient, and in sediment type, composition and grain size throughout the NWMR. Sandy beaches are important for both resident and migratory seabirds and shorebirds, and can provide an important habitat for turtle nesting and breeding. They are located along many coastlines of the nearshore environments of the NWMR.		
	• Cape Domett • Lacrosse Island	• Eighty Mile Beach • Eco Beach • Dampier Archipelago • Inshore Pilbara Islands (Northern, Middle and Southern)	• Ningaloo Coast • Muiron Islands • Exmouth Gulf

Table 5-2: Benthic communities and habitats within the SWMR

Habitat/community	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA 2008ba).
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope and escarpments.
	• Perth Canyon Marine Park • Ancient coastline at 90 to 120 m depth contour KEF • Diamantina Fracture Zone • Naturaliste Plateau
Coral reef	To date, studies and understanding of the corals within the SWMR have concentrated on the shallow water areas in State waters. Within the deeper Commonwealth waters of the SWMR, little is known of the distribution of corals.
Filter feeders/ heterotrophic	Filter-feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (Department of the Environment and Water Resources (DEWR) 2007). Filter feeders generally inhabit deeper habitats (below the photic zone) that have strong currents and hard substratum.
	• Ancient coastline at 90 to 120 m depth contour KEF • Diamantina Fracture Zone Naturaliste Plateau • Perth Canyon Marine Park • South-west Corner Marine Park

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Habitat/community	Location
Nearshore	
Coral reef	The northern extent of the SWMR coincides loosely with the disappearance of abundant and diverse coral from coastal habitats. To the south of Shark Bay, abundant corals occur predominantly around offshore islands, with corals at inshore sites occurring in very isolated patches of non-reef coral communities, usually of reduced species richness.
	• Houtman Abrolhos Islands • Rottnest Island
Seagrass and macroalgae communities	Within the SWMR, macroalgae and seagrass communities are noted for their extent, species richness and endemism. The clear waters of the region allow light to reach greater depths, with some species found at much greater depths than usual (down to 120 m) (DEWR 2007). Of the known species, there are more than 1,000 species of macro-algae and 22 species of seagrass consisting of tropical and temperate species. Seagrass and macro-algae occur in areas with sheltered bays and in the inter-reef lagoons along exposed sections of the coast. Macrophytes in southwest WA are abundant on shallow-water rock platforms and tidal pools, where these habitats support diverse, high-energy coastal communities (Tremblin *et al.* 2025). These environments, which are characteristic of higher-latitude sections of the region, support a wide variety of algal assemblages that provide structural complexity and microhabitats for numerous marine species. The presence of articulate coralline algae (such as *Amphiroa gracilis*), typically occurring among diverse macrophyte stands, illustrates the rich algal cover characteristic of these shallow, wave-exposed environments (Tremblin *et al.* 2025).
	• Houtman Abrolhos Islands • Jurien Marine Park • Shoalwater Islands Marine Park • Geographe Marine Park • Cockburn Sound • Rottnest Island • Commonwealth marine environment within and adjacent to the west-coast inshore lagoons KEF • Commonwealth marine environment within and adjacent to Geographe Bay KEF • Commonwealth marine environment surrounding the Recherche Archipelago KEF
Filter feeders/ heterotrophic	Filter-feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWR 2007). Filter feeders generally live in areas that have strong currents and hard substratum.
	• Houtman Abrolhos Islands • Recherche Archipelago

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Habitat/community	Location
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie *et al.* 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie *et al.* 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the SWMR.
	Houtman Abrolhos Islands
Sandy beaches	Sandy beaches within the SWMR are important for both resident and migratory seabirds and shorebirds, and can host breeding populations of the Australian sea lion. They are found along many coastlines of the nearshore environments of the SWMR. In addition, beaches in the SWMR provide a variety of socioeconomic values, including tourism, commercial and recreational fishing, and support other recreational activities.
	• Houtman Abrolhos Islands • Marmion Marine Park • Ngari Capes Marine Park • Walpole and Nornalup Inlets Marine Park

Table 5-3: Benthic communities and habitats within the NMR

Habitat/community	Location
Offshore habitats and biological communities	
Soft sediment with infauna	Most of the offshore environment of the NMR is characterised by relatively flat expanses of soft sediment seabed. The soft sediments of the region are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs and echinoderms.
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope and escarpments. The variability in substrate composition may contribute to the presence of unique ecosystems. Species include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments.
	• Carbonate bank and terrace system of the Van Diemen Rise KEF • Pinnacles of the Bonaparte Basin KEF
Coral reef	Offshore coral reefs within the NMR are generally associated with a series of submerged shoals and banks. The shoals and banks in the region support tropical marine biota consistent with that found on emergent reef systems of the Indo-West Pacific region, such as Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef (Heyward *et al.* 1997).
	• Pinnacles of the Bonaparte Basin KEF • Evans Shoal • Tassie Shoal • Blackwood Shoal

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Habitat/community	Location
Filter feeders/ heterotrophic	Filter-feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA 2007b). Filter feeders generally live in areas that have strong currents and hard substratum, and typically associated with the deeper habitats of the submerged shoals and banks, and canyon features.
	• Carbonate bank and terrace system of the Van Diemen Rise KEF • Pinnacles of the Bonaparte Basin KEF • Tributary Canyons of the Arafura Depression KEF • Evans Shoal • Tassie Shoal • Goodrich Bank
Nearshore	
Coral reef	Within the NMR corals occur both as reefs and in non-reef coral communities. Nearshore reefs include patch reefs and fringing reefs sparsely distributed within the region. Coral reefs within the NMR provide breeding and aggregation areas for many fish species, including mackerel and snapper, and offer refuges for sea snakes and apex predators such as sharks.
	• Submerged coral reefs of the Gulf of Carpentaria KEF • Darwin Harbour
Seagrass and macroalgae communities	Seagrasses provide key habitats in the NMR. They stabilise coastal sediments and trap and recycle nutrients. They provide nursery grounds for commercially harvested fish and prawns and provide feeding grounds for dugongs and green turtles. Seagrass distribution in the region is largely associated with sheltered small bays and inlets, including shallow waters surrounding inshore islands.
	• Field Island • The mainland coastline adjacent to Kakadu National Park
Filter feeders/ heterotrophic	Filter-feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water by passing the water over specialised filtration structures (DEWHA 2007b). Filter feeders generally inhabit areas that have strong currents and hard substratum.
	Cape Helveticus
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie *et al.* 2006). Mangroves provide habitat for waterbirds and support many commercially and recreationally important fish and crustacean species for parts of their life cycles. They buffer the coast from large tidal movements, storm surges and flooding.
	• Tiwi Islands • Darwin Harbour • The mainland coastline adjacent to the Daly River

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Habitat/community	Location
Sandy beaches	Sandy beaches vary in length, width and gradient, and in sediment type, composition and grain size throughout the NMR, and are important for both resident and migratory seabirds and shorebirds. Sandy beaches can also provide an important habitat for turtle nesting. They are located along many coastlines of the nearshore environments of the islands and mainland shores of the NMR.
	• Tiwi Islands • Cobourg Peninsula • Joseph Bonaparte Gulf

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5.2 Key benthic communities and habitats of the NWMR

The NWMR encompasses offshore and coastal waters, islands and mainland shoreline habitats typified by mangroves, tidal flats, saltmarshes, coral reefs (remote, offshore reef systems to extensive fringing reef systems such as Ningaloo), sandy beaches and smaller areas of rocky shores. Each of these habitat types has the potential to support different flora and fauna assemblages due to the different physical factors (such as waves, tides, light) influencing the habitat.

The NWMR has a large area of continental shelf and continental slope, with a range of bathymetric features such as canyons, plateaus, terraces, ridges, reefs, banks and shoals. The marine environment in this region is typified by tropical to subtropical marine ecosystems with diverse habitats from soft sediments, canyons, remote oceanic coral reef systems and continental shelf limestone pavement seabed habitat. The NWMR encompasses large seabed areas of deepwater seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and spare benthic biota.

Comprehensive surveys and documentation of habitats and biota from the shelf to deep waters (100 m to 1,000 m) spanning 13 sites between Barrow Island and Ashmore Reef, running downslope across the continental shelf and slope of NWS, were conducted in 2007 (Williams *et al.* 2010). Sites on the continental slope (about 400 m deep) predominantly comprised soft, muddy sediments, and epifauna were sparsely distributed and limited to isolated individual sessile biota such as crinoids, anemones, glass sponges and sea pens. Occasional non-sessile biota, characteristic of the deeper water benthic communities, were recorded and included echinoderms (urchins, holothurians and sea stars) and decapod crustaceans (prawns and crabs). Similar benthic biota composition was reported for the continental slope seabed habitats at depths of 700 to −1,000 m (Williams *et al.* 2010).

With reference to the NWS, surveys have documented habitats comprising bare unconsolidated carbonate sediments supporting a sparse assemblage of deposit and filter-feeding organisms, including glass sponges, urchins, sea cucumbers, sea stars and crustaceans (URS 2010). Filter-feeding communities documented within the NWS include bryozoans, sponges, gorgonians and hydroids attached to consolidated substrate; these were interspersed with sand, which hosted fewer filter feeders (Australian Institute of Marine Science (AIMS) 2014). Infauna associated with soft, unconsolidated sediment habitat such as polychaetes are widespread and well represented along the continental shelf and upper slopes (Brewer *et al.* 2007; RPS 2012). Table 5-1 summarises the key habitats and biological communities that are representative of the broader NWMR.

There is a marked biodiversity gradient from high ecologically valued coastal (primary producer habitats and associated benthic and mobile biota) to the lower valued deeper offshore habitats comprising soft, unconsolidated sediments and typically sparser biota (epifauna and infauna), except the submerged shoal features, remote oceanic reef systems of the Rowley Shoals, Scott Reef and Ashmore Reef, the submerged shoals of Glomar Shoal and Rankin Bank in the NWS, in addition to the fringing reef habitats of Ningaloo, the Kimberley coastline, the offshore island groups such as Barrow Island, Lowendal and Montebello Islands, and the Dampier Archipelago. The next subsections present a brief overview of the high valued biodiversity reef and mesophotic habitats and associated benthic communities.

Table 11-1 details the 13 KEFs within the NWMR ,as identified by the PMST (Appendix A). Table 12-4 describes protected areas of the NWMR.

5.2.1 Browse

The most diverse habitats and benthic communities in the Kimberley region of north-western Australia are where the oceanic reef systems of Ashmore, Cartier, Scott and Seringapatam reefs, and the Rowley Shoals, sit near the edge of the continental shelf hundreds of kilometres from the mainland and from each other (Gilmour *et al.* 2019; 2023); see Figure 5-1. The long-term monitoring program for Scott Reef and the Rowley Shoals conducted by AIMS since 1994 is now one of the world's longest studies of coral reef ecosystems. It provides unprecedented understanding of the background (baseline) changes at oceanic reefs on Australia's NWS, encompassing the physical drivers and the underlying processes of change (impact and recovery) from acute disturbances (cyclones, heat stress causing coral mass-bleaching).

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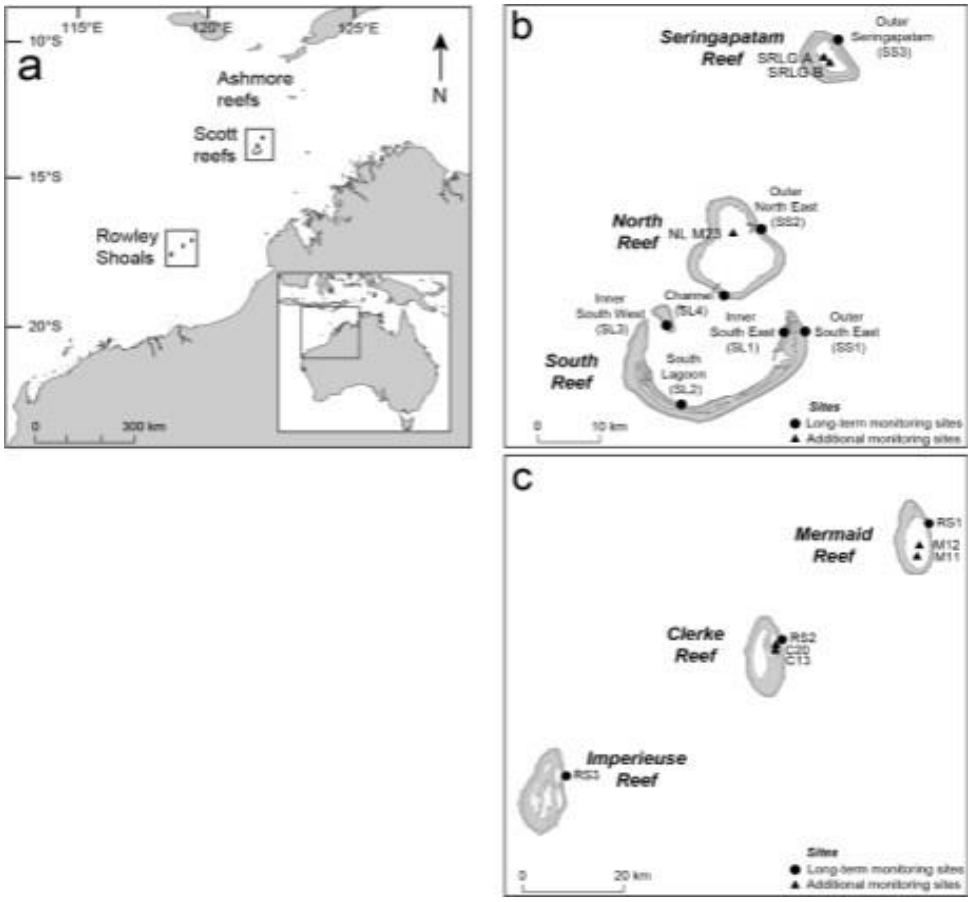


Figure 5-1: The position of Scott Reef, Ashmore Reef and the Rowley Shoals off north-western Australia and location of permanent long-term monitoring sites

Source: Gilmour et al. *(2023)*

5.2.1.1 Scott Reef

Scott Reef is an annular reef about 17 km long and 16 km wide comprising two coral reef atolls rising steeply from depths of around 400 to 500 m. These atolls, referred to as South Scott Reef and North Scott Reef, are separated by a deep channel (Figure 5-1). North Scott Reef features an emergent reef flat, outer slope habitats and a shallow lagoon about 20 m deep, with two small channels linking it to the surrounding ocean. The shallow closed waters of North Scott Reef lagoon contain a range of habitats, from bare sand, sand with coral outcrops, to shallow to deep lagoonal coral dominated habitats (Gilmour *et al.* 2013). This contrasts with the deeper, more open lagoon of South Scott Reef, described as an extensive, unique mesophotic (30 to 70 m depth) coral-dominated habitat comprising hard corals, calcareous algae, soft corals, sponges, bryozoans and other invertebrates (Gilmour *et al.* 2013; Heyward and Radford 2019). It is largely protected from the direct influence of major storms by the surrounding horseshoe-shaped emergent reef rim (Heyward and Radford 2019).

South Scott Reef shallow water habitats also include reef flats (of low coral cover) and extensive outer reef slopes with the highest hard coral diversity of any habitat at Scott Reef (Gilmour *et al.* 2013). Studies at Scott Reef have identified that two short and distinct periods of mass spawning occur during spring and autumn, unlike single mass spawning events at most other reefs around Australia (Gilmour *et al.* 2009a). The dominant coral spawning period at Scott Reef is autumn (March/April), with a secondary, lesser spawning event in spring (October/November). Corals at Scott Reef that are brooders are likely to have multiple gametogenic cycles and spawn several times throughout the year (Gilmour *et al.* 2008; Gilmour *et al.* 2009a).

Over the past 30 years, the coral communities at Scott Reef have been extensively studied and the long-term monitoring program showed that from 1994 to 2021, the mean cover of hard and soft corals on the reef slopes was 36% and ranged between 13% and 59%. Decreases in coral cover were caused by damaging waves, generated by storms and cyclones, and recurrent heat stress causing coral bleaching. The

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most severe heat stress and mass coral bleaching occurred in 1998 and 2016 (Gilmour *et al.* 2023). In 1998 a mass-bleaching event caused coral cover at Scott Reef to collapse from about 60% to 6%, representing one of the most severe disturbance events recorded for the system (Birt *et al.* 2025). Recovery took over a decade. By 2010, coral cover had reached pre-bleaching levels (45%). Despite moderate coral bleaching and cyclone disturbances, cover increased to 49% in January 2016, after which the reefs were impacted by a second mass bleaching event that reduced mean coral cover to 15%. Five years after the 2016 mass bleaching event, total cover of hard and soft corals had reached 34%, showing a similar rate of recovery to that after the 1998 mass bleaching (Gilmour *et al.* 2023). Long-term monitoring of reef fish demonstrated the 1998 coral collapse caused strong shifts in fish trophic structure, including marked declines in several species' groups. Although fish assemblages changed substantially after disturbance, they showed resilience and eventual recovery over time. Functional responses were complex, with functional originality at Scott Reef generally increasing as *Acropora* coral cover declined (Birt *et al.* 2025).

Scott Reef supports five species of seagrass: *Thalassia hemprichii, Thalassodendron ciliatum, Cymodocea rotundata, Halophila ovalis* and *H. decipiens* (URS 2006). These species occur widely throughout the Indo-Pacific region. *Thalassia hemprichii* is the most abundant seagrass at Scott Reef (Skewes *et al.* 1999; URS 2006). Skewes *et al.* (1999) reported the dominance of *T. hemprichii*, along with less common *H. ovalis* at South Scott Reef and *T. hemprichii* and *H. ovalis* as co-dominants, with minor *T. ciliatum* at North Scott Reef, all occurring on the reef edge, lagoon edge and shallow lagoon. Seagrasses recorded in less than 15 m depth covered a total of 23 ha out of 10,613 ha (0.22%) at North Scott Reef, and 77 ha out of 14,400 ha (0.54%) at South Scott Reef.

A total of 121 species of algae have been reported from Scott Reef. However, there is likely to be smaller, cryptic species not yet recorded (Western Australian Museum 2009) (SKM 2007). Surveys of macroalgae in 2006 found algal cover to be about 5 to 10% in shallow and intertidal areas, but highly variable, with some areas approaching 100% cover (Western Australian Museum 2009). Higher-energy reef fronts typically supported encrusting coralline *Hydrolithon onkodes* near the reef crest, characteristic of Indo-Pacific reefs. Other reef-front species were associated with dark recesses, including *Peyssonnelia inamoena* and *Corynocystis prostrata*. *Halimeda* species were common across reef flats, outcrops and sandy pools. The turf green algae *Boodlea vanbosseae* and spongy green *Boodlea composita* were commonly present on outcrops, along with red algae *Polysiphonia* spp., *Coelothrix irregularis* and *Gelidiopsis* spp. Dense monospecific stands of algae were observed, most commonly *Ulva* spp. In shallow sandy habitats, as well as *Polysiphonia* spp. at North Scott Reef and *Coelothrix irregularis* at South Scott Reef. An additional survey of deepwater habitats in the Scott Reef lagoons (URS 2007b) identified areas where *Halimeda* occurred in clumps many metres in diameter and was the dominant component of the community. Such densities of *Halimeda* are not considered unique in the region, with similar densities observed at Mermaid, Scott and Seringapatam reefs (Western Australian Museum 2009).

5.2.1.2 Rowley Shoals

The Rowley Shoals comprise three distinct reef continental shelf atolls of similar dimension, shape and orientation, named Mermaid Reef, Clerke Reef and Imperieuse Reef. The reefs are orientated north-south and are about 30 to 40 km apart. Each atoll covers an area about 80 to 90 km² and extends almost vertically from seafloor depths of around 400 m. Each atoll comprises extensive lagoon habitat composed of bare sand, coral-dominated patches and coral outcrops, emergent reef crests and outer reef slopes. At high tide only the sandy cays of Clerke Reef and Imperieuse Reef remain visible.

Across the Rowley Shoals, the reef crest and reef slope were most similar and the lagoon most unique in terms of habitat and benthic communities. Hard corals and coralline algae were the most abundant biota (>40%) and other benthic organisms such as sponges, ascidians and macroalgae are rare (<5%). Soft corals were also rare (<1%) at all reefs and habitats, apart from the reef slope (4%) at Mermaid Reef. Across all surveys (1995 to 2019), the mean cover of hard and soft corals at the reef slope was 46% and ranged between 26% and 58%. Decreases in coral cover were primarily due to frequent storms and cyclones. Between 2005 and 2008, three cyclones and moderate heat stress caused a mean reduction in coral cover (52% to 42%) at the reef slope habitat across the Rowley Shoals. Coral bleaching was low (<10%) in January 2016, except for minor to moderate (11 to 30%) bleaching at two lagoon sites at Mermaid Reef. A prolonged heat stress period (45 days) in May 2020 caused the worst coral bleaching on record (about 20%) across reef habitats, with the highest heat stress and declines in coral cover at the reef slope for Imperieuse Reef (9%) and minor bleaching and small decreases in coral cover at the reef slope (5%) and lagoon (3%) at Clerke Reef (Gilmour *et al.* 2023). Keesing *et al.* (2025) surveyed coral reef communities at Mermaid Reef in July 2022. This survey also compared data from studies in previous and subsequent years and quantified the benthic coverage of coral, invertebrates, algae and sponge. The survey demonstrated densities of

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invertebrates, including sea cucumbers, coral communities and giant clams, remained consistent with previous surveys, with mean hard coral cover being highest (40-50%) on the exposed western outer reef slope and lowest on the reef flat (<10%). *Acropora* was the most abundant coral genus and was significantly greater on the exposed outer western slope. Turf algae on reef surfaces were an important element of the benthic cover (25 to 60%) but lowest in the shallow lagoon. Macroalgae accounted for >1% of benthic cover on the reef flat, while soft corals comprised about 2 to 3% of cover on the back reef outer slope. Sponges were also a minor part of the benthic cover (mostly <0.5%) (Keesing *et al.* 2025).

Sparsely-distributed seagrass communities are also within the Rowley Shoals. *Thalassia hemprichii* has been recorded at both Mermaid and Clerke reefs and *Thalassodendron ciliatum* and *Halophila ovalis* have been recorded at Mermaid Reef (Berry 1986; Walker and Prince 1987), primarily within the lagoon.

The reefs of Seringapatam, Scott Reef, Ashmore Reef and Cartier Island are recognised as KEFs within the NWMR; see Section 11. Protected area status is in Section 12 and includes the AMPs of Ashmore Reef, Cartier Island, Kimberley and Mermaid Reef, and the State marine parks of the North Kimberley, the Rowley Shoals, Lalang-garram horizontal falls and North Lalang-garram.

5.2.2 North West Shelf

The NWS contains numerous benthic habitats and biological communities, both nearshore and offshore, important in supporting biodiversity across the region.

The nearshore NWS environment contains the Dampier Archipelago, a complex coastal ecosystem. Extensive surveys have demonstrated its high biodiversity values comprising of coral, macroalgae, seagrass and benthic communities across the intertidal and subtidal environments.

Offshore, the NWS comprises various submerged shoal features of high biodiversity value, which support hard coral and macro-algae communities on upper reaches of the shoals and mesophotic filter-feeding benthic communities in deeper waters on and near the shoal features, namely Glomar Shoal and Rankin Bank.

5.2.2.1 Dampier Archipelago

The Dampier Archipelago, on the Pilbara coast of WA, comprises a complex of offshore islands, intertidal and subtidal reefs, embayments and coastal waters on the NWS. The region supports a highly diverse marine environment shaped by strong tidal processes, seasonal monsoonal influences, cyclones, and variability associated with El Niño southern oscillation and the Leeuwin Current system.

Coral communities of the Dampier Archipelago predominantly occur as narrow linear features fringing the shorelines of islands and the Burrup Peninsula, typically between 2 m and 10 m mean lower low water (Blakeway and Radford 2005; Jones 2004). The fringing reefs are not true coral reefs; they establish and grow on existing hard substratum (Jones 2004; WorleyParsons 2009). Both zooxanthellate and azooxanthellate corals are found throughout the Dampier Archipelago, including a total of 229 species from 57 hermatypic coral genera (Woodside 2006; Griffith 2004), representing a large proportion of the 318 hermatypic species from 70 genera known to occur in WA (URS 2004). Studies have indicated the coral assemblage distribution in Mermaid Sound is largely driven by turbidity, wave exposure and tidal currents, with inner Mermaid Sound exhibiting more sediment-tolerant species (Blakeway and Radford 2005; CALM 1994). A baseline assessment of the status of coral communities within Mermaid Sound was completed in May 2019 (MScience 2019). Coral cover measured in this survey was very similar to historic cover levels, ranging from 5.7% to 56.7%.

The ecology, particularly reproductive, of corals in the Dampier Archipelago has been extensively studied (Simpson 1985a; Simpson 1985b; Simpson 1988; Heyward *et al.* 2000; Baird *et al.* 2011). Most of the major coral species are broadcast spawners and have their major peak of reproductive activity in autumn between March and April, about seven to ten nights after the full moon, but there is also some participation in a spring spawning (Gilmour *et al.* 2017). Periods of reproduction through these seasons may be more protracted than on the northern reefs, and species common to the Pilbara display distinct cycles of reproduction (Gilmour *et al.* 2017).

Seagrasses in the Dampier Archipelago are generally sparse, occurring in low abundance on shallow sandy sediments in sheltered areas and interspersed with other benthic communities and habitats (CALM 2005b; Jones 2004; MScience 2014). Surveys and studies (McMahon *et al.* 2017; Woodside 2006) of the region have identified nine species; however, *Halophila* is the predominant genus and is typically restricted to the 6 m (chart datum) depth contour (MScience 2014).

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The most significant areas of seagrass in the Dampier Archipelago are found between Keast and Legendre islands to the north of the Burrup Peninsula, and between West Intercourse Island and Cape Preston. Recorded occurrences of *Halophila* spp. In the Dampier Archipelago fluctuate, depending on factors such as salinity, success of seed set and colonisation, temperature, and grazing by dugongs (Woodside 2006). Furthermore, this fluctuation may indicate the presence of transitory communities, which are annual meadows that develop from the seed bank, grow flower, set seed and die back each year (McMahon *et al.* 2017). The species composition and temporal patterns of abundance and distribution of seagrasses in northwest Australia are highly dynamic and highly variable, often seasonal, dying off over certain periods of the year then re-establishing (Vanderkliff *et al.* 2017).

Macroalgal assemblages in the Pilbara region display an ephemeral growth pattern and may not be present year-round, despite the presence of suitable habitat. Large algal habitats occur around West Intercourse Island and shallow reef flats on the western and eastern margins of Mermaid Sound. In nearshore areas, macroalgae are mostly found on shallow limestone pavements located on the northern and western portions of West Intercourse, West Lewis and Malus islands. More broadly, large expanses of macroalgae are prevalent along the seaward side of West Intercourse Island, extending south-west along the coast to Cape Preston and beyond. The most abundant group of algae in the region is brown algae; particularly, species from the genera *Sargassum, Dictyopteris* and *Padina* are very common (Woodside 2006). The most common species of green algae in the Dampier Archipelago include *Caulerpa* and calcareous *Halimeda* (CALM 2005b; Jones 2004). Various red algae are also found in the Dampier Archipelago, including corallines, calcified red algae and algal turf (Jones 2004).

The Pilbara region has a very high diversity of marine sponges (Fromont *et al.* 2016). Fromont (2003) recorded 275 sponge species within the Dampier Archipelago. About 20% of these species are known to be limited to WA and are likely to be endemic (Fromont 2003). Surveys conducted by Fromont (2004) found the highest diversity of sponges in the Dampier Archipelago occurred in sponge communities that were either low relief or pavement habitats, often with a sediment layer with strong tidal currents. High-diversity sponge communities have been observed at the eastern end of Flying Foam Passage, at the western end of Mermaid Strait, and between Enderby and West Lewis islands (Fromont 2004; Jones 2004). Generally, the high habitat complexity of the Dampier Archipelago corresponds with high sponge species richness, contributing to the high biodiversity value of the nearshore environment of the Pilbara region (Fromont 2016).

5.2.2.2 Glomar Shoal

Glomar Shoal is a large (215 km²) and complex bathymetrical feature on the outer continental shelf off the Pilbara coast. Glomar Shoal is about 8.5 times wider than Rankin Bank at the 60 m contour. Glomar Shoal rises from 80 m depth on its south-west side and 70 m depth on its north-eastern side to form a single plateau at 40 m depth (Abdul Waheb *et al.* 2018). Together with Rankin Bank, these remote shallow water areas represent regionally unique habitats and are considered likely to play an important role in the productivity of the Pilbara region (AIMS 2014; Abdul Wahab *et al.* 2018) (Figure 5-1).

Baseline biodiversity and habitat mapping surveys of the benthic habitats and communities at Glomar Shoal and Rankin Bank were undertaken in 2013 and 2017 by AIMS (2014), as detailed in Abdul Waheb *et al.* (2018) and Jones *et al.* (2021), respectively. Salinity and temperature were found to be slightly higher in 2017 compared with the 2013 values (Abdul Wahab *et al.* 2018), most likely due to seasonality. Substrates at Glomar Shoal were found to vary with depth, from coarse unconsolidated sediment at depths greater than 60 m and hard substrate (as in, consolidate reef) supporting benthic communities comprising hard and soft corals, sponges and macroalgae at depths <40 m (Abdul Wahab *et al.* 2018). Total cover of benthic taxa (hard coral, soft coral, sponges and other benthic biota) was highest at depths <40 m and decreased with depth (Abdul Wahab *et al.* 2018). At depths of 60 to 80 m, benthic cover was low (about 2%) and at depths greater than 80 m, benthic cover was barely present (Abdul Wahab *et al.* 2018).

A total of 170 fish species were identified at Glomar Shoal and fish abundance and diversity of the demersal fish communities of Glomar Shoal were found to vary with seabed habitat type; sand, hard coral and sponge coverage influenced fish communities, with higher abundance and diversity of fish associated with shallow hard coral habitats (Abdul Wahab *et al.* 2018). In general, the fish abundance and diversity of Glomar Shoal are considered comparable with other reefs and the submerged shoals and banks in the region, although less diverse and abundant than fish assemblages at Rankin Bank (Abdul Wahab *et al.* 2018).

Glomar Shoal is recognised as a KEF within NWMR; see Table 11-1. Protected area status is described in Section 12 and includes the Commonwealth Marine Park of Montebello, the State marine parks of Montebello Islands and Barrow Island, and the Barrow Island marine management area.

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5.2.2.3 Rankin Bank

Rankin Bank comprises three main sedimentary banks rising steeply from between 80 and 120 m below sea level, reaching 20 to 40 m below the sea surface and featuring plateaus and troughs (Abdul Wahab *et al.* 2018). Rankin Bank is one of only two large, complex bathymetrical features on the outer western shelf of the West Pilbara (the other being Glomar Shoal, about 125 km west-southwest) (Abdul Waheb *et al.* 2018) (Figure 5-1).

Surveys of Rankin Bank were undertaken by AIMS in 2013 and in 2017 to better understand the habitats and complexity of the submerged shoal ecosystems, and associated fish assemblages (AIMS 2014; Abdul Waheb *et al.* 2018 and 2017; Jones *et al.* 2021). The surveys were undertaken using various methods, including multibeam survey, towed video, stereo baited underwater video survey and beam transmissions (to measure turbidity), at depths between 20 and 115 m (Abdul Waheb *et al.* 2018). Water column data were also collected in January 2017 to examine potential temporal variation in these parameters (Abdul Waheb *et al.* 2018).

Seabed sediments at Rankin Bank were primarily carbonate with a grain size of mostly sand, with finer muds found at the deeper sample sites (AIMS 2014). Sand was also found to increase with depth and unconsolidated reef exceeded 30% at all depths (Abdul Waheb *et al.* 2018). Hydrocarbon and trace metal concentrations in sediments indicated the bank was unaffected by anthropogenic pollution (AIMS 2014). Turbidity was lower at Rankin Bank than Glomar Shoal during the survey, with beam transmissions remaining above 95% at all depths (Abdul Waheb *et al.* 2018). Turbidity was slightly lower in 2017, whereas temperature and salinity were slightly higher at all depths (Abdul Waheb *et al.* 2018).

The proportion of cover by benthic taxa was highest for macroalgae and hard corals, particularly at depths less than 40 m, and decreased with increasing depth. Other benthic taxa included soft corals and sponges, which were present in lower proportions at all depths. Encrusting corals were common, reaching cover of about 12.5% at depths less than 40 m. Solitary corals were also present (about 10% cover) primarily at depths between 40 and 60 m. Foliose and submassive/columnar corals were also present (Abdul Waheb *et al.* 2018).

Fish abundance and diversity at Rankin Bank were found to be comparable with other reefs in north-west Australia, and notably twice as abundant and 1.5 times more diverse than those fishes identified in a comparable survey at Glomar Shoal (Abdul Waheb *et al.* 2018). A total of 205 fish species were recorded at Rankin Bank, 100 of which were common to both Glomar Shoal and Rankin Bank. Depth, location, sand, sponges and hard coral were all found to contribute to the fish communities present. Specifically, fish communities were primarily associated with hard coral and shallow depths at Rankin Bank (Abdul Waheb *et al.* 2018).

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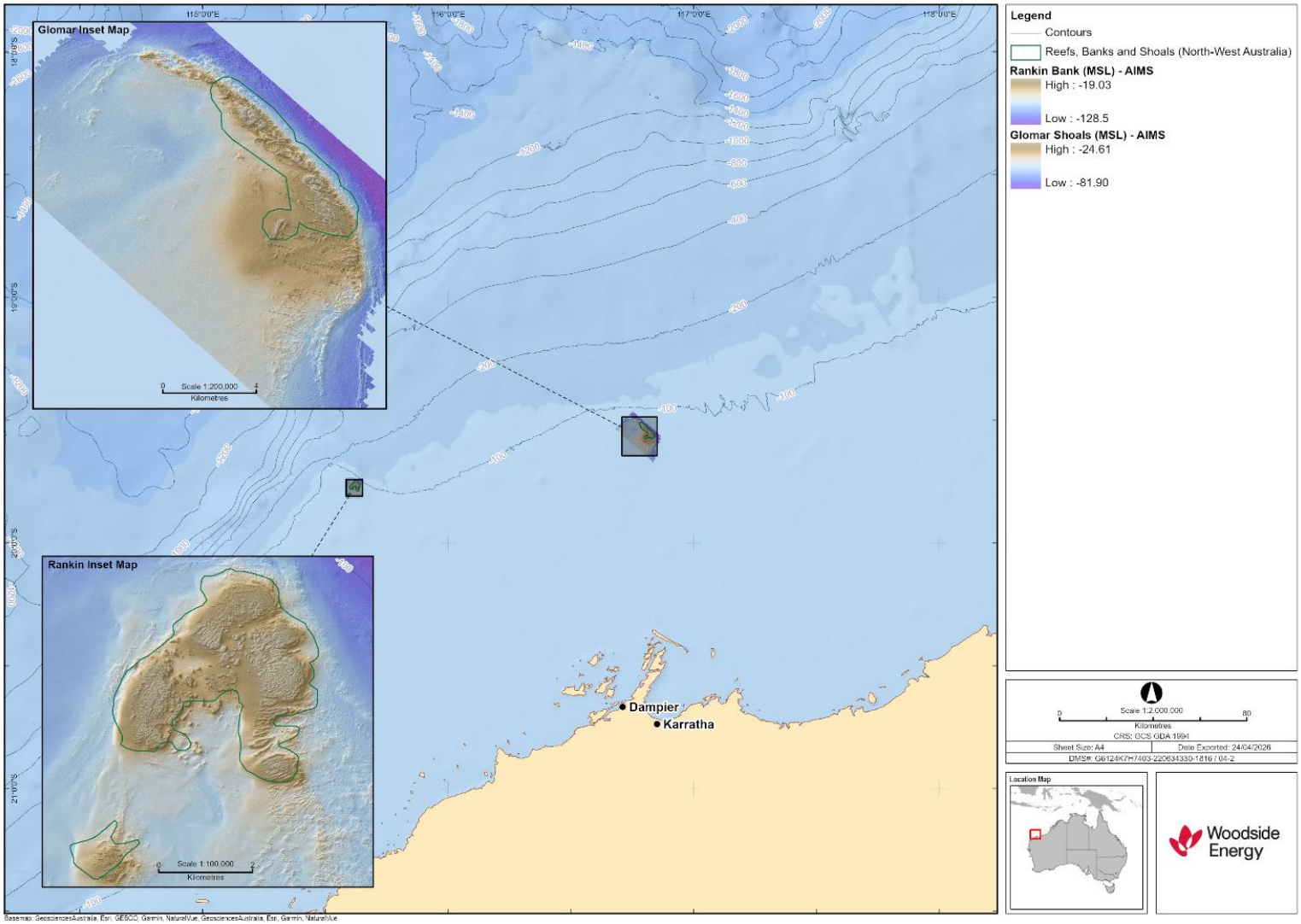


Figure 5-2: Habitat maps of Rankin Bank and Glomar Shoal

Source: AIMS (2014)

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5.2.3 North West Cape

The North West Cape contains highly diverse benthic habitats and biological communities, both nearshore and offshore, important in supporting biodiversity across the North West Cape region. The benthic habitats of Exmouth Gulf, Ningaloo Reef and Muiron Islands are ecologically significant, supporting high biodiversity and important habitats for a range of marine species.

The Exmouth Gulf supports diverse benthic habitats, including seagrass meadows, cyanobacterial mats, coral communities and filter-feeding assemblages, which contribute to primary productivity, nutrient cycling and provide habitat for species of ecological and conservation significance. Ningaloo Reef and the Muiron Islands are characterised by extensive coral and algal reef communities that underpin the region's internationally recognised biodiversity values, supporting diverse marine life and important ecological connectivity across the broader North West Cape region. The next subsections describe benthic communities and habitats for the North West Cape.

5.2.3.1 Exmouth Gulf

The Exmouth Gulf supports highly diverse subtidal and intertidal habitats, including cyanobacterial mats, seagrass meadows, mangroves, coral communities and salt flats. Spanning land and sea, within and beyond Exmouth Gulf, the habitats support nutrient flows and species connectivity, while groundwater and seawater interact to regulate the unique karst system and subterranean fauna of Cape Range (Western Australian Marine Science Institution (WAMSI) 2025).

Subtidal benthic habitats within the Exmouth Gulf are dominated by a combination of unvegetated sediments (about 60.5% of benthos), filter-feeding communities (about 24%), seagrass meadows (about 8.1%) and coral reef habitats (about 1.9%) (WAMSI 2025). Cyanobacterial mats are a particularly important benthic component. These mats contribute to primary production and nitrogen fixation within the coastal system, with estimates indicating they contribute up to about 15% of total primary production in the Gulf, supporting higher trophic levels, including fish and elasmobranchs (WAMSI 2025).

Seagrass meadows occur in shallow subtidal waters, particularly along the eastern margins of the Gulf, where they provide essential nursery and foraging habitat for commercially important prawn species, dugongs and marine turtles, while also stabilising sediments and contributing to carbon cycling. Seagrass cover and extent vary seasonally, with the highest densities recorded in summer and the lowest spatial extent recorded in winter. A study conducted in the eastern Gulf between 2013 and 2015 found that seagrass area coverage more than doubled in summer compared to the coverage recorded in winter (WAMSI 2025). This seasonal shift can be attributed to lower turbidity in the Gulf in summer allowing increased sunlight into the water column, which facilitates seagrass expansion before declining in winter due to increased turbidity and cooler water (Evans *et al.* 2025).

Coral reefs of the Gulf occupy a relatively small proportion but support a disproportionately high biodiversity, and are particularly important around the Muiron Islands, Bundegi and offshore islands (WAMSI 2025). Many reefs within Exmouth Gulf are considered marginal or turbid systems, yet they demonstrate complex responses to environmental stressors and contribute to regional connectivity with Ningaloo Reef and the wider Pilbara (WAMSI 2025).

Habitats of the Exmouth Gulf support a high diversity of fauna, including fauna of ecological and conservation importance, such as sawfish, sea snakes, dugongs, marine turtles, humpback whales and migratory birds (WAMSI 2025). Further, the benthic environment of the Gulf supports a diverse and ecologically distinct assemblage of sessile benthic marine invertebrates, particularly within shallow waters (<30 m depth) (Richards *et al.* 2025). A comprehensive review of museum specimens, verified photographic records and biodiversity databases identified at least 295 species of sessile benthic invertebrates from Exmouth Gulf, representing a substantial component of the North West Cape regional biodiversity. Notably, 165 of these species are restricted to Exmouth Gulf and have not been recorded within the neighbouring habitats of Ningaloo Reef or the Muiron Islands. A distinctive community of filter-feeding and habitat-forming invertebrates, including more than 125 sponge species, 27 tunicate species and 18 anemone species, have also been identified in the Gulf and found to be absent from neighbouring areas. All three sea pen species recorded within the broader study area occur exclusively within Exmouth Gulf (Richards *et al.* 2025). The distinctive communities highlight the Gulf as a centre of unique benthic diversity, shaped by turbid, low light and dynamic environmental conditions (Richards *et al.* 2025).

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5.2.3.2 Ningaloo Reef and Muiron Islands

Ningaloo Reef is one of Australia's iconic marine areas. The significance of this ecosystem is recognised through the reef's inclusion in State and Commonwealth marine parks and the World Heritage Register. Ningaloo Reef is the only example in the world of an extensive fringing reef on the west coast of a continent. It is one of the longest (about 300 km) and most pristine fringing reefs in the world, with an unusually narrow continental shelf. Deep oceanic waters, the reef and coastline habitats and benthic communities are close, resulting in a huge array of internationally significant marine life coexisting. More than 200 hard coral, 500 fish, 650 mollusc, 600 crustacean, 1,000 marine algae, 155 sponge and 25 echinoderm species have been recorded from the shelf, slope and deepwater habitats[2]. Refer to the CSIRO Ningaloo Outlook program for more information and publications relating to the shallow and deepwater reef systems, and megafauna species (marine turtles and whale sharks)[3].

The extensive reef system has been classified by topography and benthic cover using airborne hyperspectral surveys; much of the area was allocated as shallow, flat lagoons intersected by narrow, deeper channels that facilitate water circulation. Some of the geomorphic/benthic classes of coral-algae mosaics in different topographic settings are presented below (Kobryn *et al.* 2022):

- coral and algal communities – reef flat and very shallow areas
- coral and algal communities – backreef and shallow forereef
- coral and algal communities – deep forereef and other deep areas
- sand or limestone pavement – lagoonal slopes and flat lagoon areas.

Ningaloo Reef, and the Muiron Islands, at the northern tip of the Ningaloo Reef, contain fringing reef habitat that supports benthic communities dominated by algae and consolidated reef in the shallow reef environment. Surveys by AIMS in 2024 documented hard coral cover averaged about 13% across the Ningaloo Marine Park area (Miller *et al.* 2015). A notable pattern in the benthos recorded by Miller *et al.* (2015) was an increase in coral cover with latitude, with the highest coral cover recorded around Coral Bay and the reef areas in southern Ningaloo. Coral cover was the lowest at the East Ningaloo Province (northern Exmouth Gulf) (<6%). Relative to Scott Reef and the Rowley Shoals (Section 5.2.1), the Ningaloo benthic communities are distinct in that they are characterised by high biotic cover overall, but dominated by algal cover and with less than half the cover of key biota including hard corals, soft corals and sponges as recorded on offshore reefs (Miller *et al.* 2015).

Ningaloo Reef is vulnerable to storm damage and marine heat stress events, which have resulted in past localised coral damage and moderate coral bleaching. Coral bleaching occurred in 2022 due to warm ocean temperatures driven by the 2021–22 La Niña. The region's last severe marine heatwave was driven by the 2010–11 La Niña, which resulted in bleaching being recorded for the first time on Ningaloo[4]. Also of note are recurrent deoxygenation events at Bills Bay (Coral Bay) after coral spawning events. Last occurring in March 2022, deoxygenation was triggered by a combination of weather and oceanographic conditions that led to prolonged trapping of coral spawn in Bills Bay, which in turn caused mass coral mortality and a large but localised fish kill. The 2022 deoxygenation event was the seventh such event recorded in documented history (Richards *et al.* 2024).

Commonwealth waters adjacent to Ningaloo Reef are recognised as a KEF within the NWMR (Table 11-1).

5.2.4 Shark Bay

Shark Bay is the most westerly point of Australia and represents a transition zone between temperate and tropical marine fauna, resulting in high species diversity (Miller *et al.* 2015), including fringing coral communities on the leeside of the barrier islands of Dirk Hartog, Bernier and Dorre. The region is renowned for its terrestrial and marine biodiversity, including seagrass cover.

Seagrass in Shark Bay extends over 4,000 km² of the bay and the 1,030 km² Wooramel Seagrass Bank, which is the largest structure of its type in the world. Benthic communities in relatively sheltered areas of outer Shark Bay are characterised by seagrass and turf algae, whereas in more exposed locations, benthos is dominated by macroalgal and turf algal communities (AIMS 2014). Towards the outer Bay area, seagrass is less abundant. Baseline surveys by AIMS in 2014, targeting the outer Shark Bay area and the habitats and

[2] https://library.dbca.wa.gov.au/FullTextFiles/PAM04552.pdf
[3] https://research.csiro.au/ningaloo/outlook/research-outputs/publications/
[4] https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate

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benthic communities surrounding the barrier islands of Dirk Hartog, Bernier and Dorre, found sand was a dominant feature of the benthos (>60%), particularly in areas inside the Bay and in deep water.

Corals and sponges made up <1% of the cover in outer Shark Bay, although due to inclement weather during surveys, shallow areas where coral species are more likely to occur could not be assessed (AIMS 2014). Observations of patchy but high coral cover in shallow parts of some towed video transects suggest coral cover across outer Shark Bay may have been underestimated. The highest coral cover was recorded in the channel between Dirk Hartog and Dorre islands, indicating this area may be particularly favourable for coral growth (Miller *et al.* 2015).

Marine heatwaves and other extreme climatic events are causing widespread mortality of habitat-forming species and driving significant ecological change globally, including the loss of seagrass. As marine heatwaves become more frequent and intense, the long-term resilience of these critical habitats becomes increasingly uncertain. In Shark Bay, fragmentation after a 2010–11 heatwave was found to coincide with extensive seagrass loss, indicating the loss was strongly influenced by heat-stress exposure and water depth (Taylor *et al.* 2025).

After the 2011 marine heatwave, a study assessed the changes in seagrass meadows within Monkey Mia and Shark Bay. The study used long-term *in situ* monitoring with satellite-derived habitat classification and revealed a significant loss of seagrass habitat and density (about 1,382 ha) had occurred six years after the 2011 heatwave event. While some was recorded by 2020, the dense seagrass coverage remained lower than levels recorded in 2010. Fragmentation of seagrass had increased dramatically between 2010 and 2013, with seagrass loss most evident on the edges of continuous meadows and near deep channels. Losses were mostly comprised of seagrass *Amphibolis antarctica*. *Posidonia australis* coverage remained stable initially, before a decline was observed in 2016. Despite this, recovery of overall seagrass coverage was observed in 2020, with a higher proportion of sparse meadows indicating recovery (Strydom *et al.* 2026).

Further analysis of marine heatwaves in Shark Bay has highlighted the strong influence bathymetry and geomorphology have on heat stress patterns. Hu *et al.* (2025) observed that the shallow in-bay zones of Shark Bay experience frequent short heatwave events and deeper offshore areas are subject to less frequent, intense heatwaves that are driven by El Niño southern oscillation-modulated warm-water advection. Spatial variability in thermal regimes likely intensified the 2010–11 marine heatwave impacts, as low thermal inertia in shallow seagrass meadows and restricted hydrodynamic exchange amplified thermal stress, contributing to heightened mortality and canopy fragmentation (Hu *et al.* 2025).

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6. FISHES, SHARKS AND RAYS

6.1 Regional context

WA waters provide important habitat for listed fishes, sharks and rays, including areas that support key life stages such as breeding and foraging, and migration routes for fish species. Pelagic and demersal fishes occupy a range of habitats throughout each region, from coral reefs to open offshore waters, and are an extremely important component of ecosystems, providing a link between primary production and higher predators, with many species being of conservation value and important for commercial and recreational fishing.

Table 6-1 describes the fish assemblages of each marine bioregion.

Table 6-1: Description of the fish assemblages of the marine bioregions

Marine bioregion	Overview
North-west	The NWMR supports a wide diversity of global fish species. The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last *et al.* (2005) recorded 1,431 fish species from the three bioregions encompassing the continental slope, while also acknowledging some information gaps. Of the abut 500 shark species found worldwide, 94 are found in the region (DEWHA 2008a). About 54 species of syngnathids (seahorses, seadragons, pipehorses and pipefishes) and one species of solenostomids (ghostpipefishes) are also known to occur in the NWMR or adjacent State waters (DSEWPaC 2012a). The PMST report (Appendix A) identified a total of 17 EPBC Act listed threatened or migratory shark and ray species within the NWMR (Table 6-2). An additional 53 EPBC Act listed marine fish species, including a variety of pipefish, sea dragons and ghost pipefish (Syngnathidae and Solenostomidae), that do not have a threatened or migratory status were recorded within the NWMR. Appendix A provides a full list of the species identified in the PMST report.
South-west	The fish fauna of the SWMR are highly diverse, with hundreds of species occupying a large variety of habitats, including high biodiversity of tropical and temperate fish species found at Houtman Abrolhos due to the Leeuwin Current, nutrient upwelling events attracting large aggregations of small pelagic fish and predatory fish such as tuna, billfish and sharks, and migratory fish such as herring, garfish, tailor and Australian salmon visiting the west-coast inshore lagoons seasonally. The demersal slope and associated fish communities of the Central Western Province are important habitats for demersal communities with high diversity and endemism. Depths below 400 m are dominated by small benthic species such as grenadiers, dogfish and cucumber fish. Only three species of bony fishes known to occur in the region are listed under the EPBC Act as threatened or marine species, and six listed species of shark (DSEWPaC 2012b). The PMST report (Appendix A) identified a total of nine EPBC Act listed threatened or migratory fish and shark species within the SWMR. An additional 36 EPBC Act listed marine fish species. including a variety of pipefish, sea dragons and ghost pipefish (Syngnathidae and Solenostomidae), that do not have a threatened or migratory status were recorded within the SWMR. Appendix A provides a full list of the species identified in the PMST report.
North	The NMR is considered an important area for sawfish and river shark species, with three species of sawfishes and two species of river sharks listed under the EPBC Act known to occur in the region. Relatively little is known about the distribution and abundance of sawfish and river sharks in the NMR. However, the NMR is crucial for supporting nationally and globally significant populations of sawfish and river shark species found nowhere else in the world. A vast array of seahorse and pipefish species are found in the area, but there is little knowledge about the distribution, relative abundance and habitats of these species in the region. Higher-order fish predators of coral and rock reef habitats include snapper, emperor and grouper. The Gulf of Carpentaria basin supports assemblages of pelagic species, including planktivorous and schooling fish, with top predators such as shark, snapper, tuna and mackerel (DSEWPaC 2012c). The PMST report (Appendix A) identified a total of 15 EPBC Act listed threatened or migratory shark and ray species within the NMR. An additional 45 EPBC Act listed marine fish species, including a variety of pipefish, sea dragons and ghost pipefish (Syngnathidae and Solenostomidae), that do not have a threatened or migratory status were recorded within the NMR. Appendix A provides a full list of the species identified in the PMST report.

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6.2 Fish, shark and rays in the NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen *et al.* 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last *et al.* (2005) recorded 1,431 species from the three bioregions encompassing the continental slope, while also acknowledging some information gaps.

The NWMR is known for its demersal slope fish assemblages; the continental slope of the Timor Province and the Northwest Transition support more than 418 and 505 species of demersal fishes, respectively, of which 64 are considered to be endemic. This is the second richest area for demersal fish species across the entire Australian continental slope. Conversely, the broad Southern Province, which covers most of southern Australia, supports 463 species, with only 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA 2008a), as described in Section 11. The Browse, NWS/Scarborough and the North West Cape activity areas overlap the continental slope demersal fish communities KEF. The continental slope between North West Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last *et al.* 2005).

The ancient coastline at 125 m depth contour KEF within the NWMR is thought to support enhanced diversity. Drivers of fish species richness, biodiversity and assemblage composition have been assessed, finding that depth, seafloor complexity and habitat type explain richness and abundance of fish assemblages (Currey-Randall *et al.* 2021). This study also found fish communities along the ancient coastline at 125 m depth contour KEF are similar to other mesophotic areas on the NWS. Most of the surveyed feature was characterised by soft sediment and highly mobile fish species (Currey-Randall *et al.* 2021).

The NWMR also features a diversity of pelagic fishes (those living in the pelagic zone) and bentho-pelagic fishes, including tuna, billfish, bramids, lutjanids, serranids and some sharks (DEWHA 2007a). These species feed on salps and jellyfish, and more often on secondary consumers such as squid and bait fish. Water depth provides an indication of the level of interaction between pelagic and benthic communities within the NWMR; in waters deeper than 1,000 m, for instance, the trophic system is pelagically-driven and benthic communities rely on particulates that fall to the seafloor (DEWHA 2007a).

Pelagic fishes play an important ecological role within the NWMR; small pelagic fishes, such as lantern fish, inhabit a range of marine environments, including inshore and continental shelf waters, and form a vital link in and between many of the region's trophic systems, feeding on pelagic phytoplankton and zooplankton and providing a food source for a wide variety of predators, including large pelagic fishes, sharks, seabirds and marine mammals (Bulman 2006; Mackie *et al.* 2007). Large pelagic fishes, such as tuna, mackerel, swordfish, sailfish and marlin, are found mainly in oceanic waters and occasionally on the continental shelf (Brewer *et al.* 2007). Both juvenile and adult phases of the large pelagic species are highly mobile and have a wide geographic distribution, although the juveniles more frequently inhabit warmer or coastal waters (DEWHA 2008a).

Table 6-2 outlines the threatened and migratory fish species that may occur, are likely to occur or are known to occur within the NWMR, with their conservation status and relevant recovery plans and conservation advice, while the next subsections focus on the fish species (including sharks and rays) listed as threatened or migratory that are known to occur within the NWMR. Section 13.2.1 provides a detailed account of commercial and recreational fisheries that operate in the region.

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Table 6-2: Threatened and migratory fish, shark and ray species identified by the EPBC Act PMST that may, likely or are known to occur within the NWMR

Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (BC Act) (WA)[5]	IUCN Red List (non-statutory)[6]	EPBC Act Part 13 statutory instrument
		Threatened status	Migratory status	Listed	Conservation status	Global status	
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	Migratory	Critically Endangered	N/A
Carcharias taurus	Grey nurse shark (west-coast population)	Vulnerable	N/A	Marine	Vulnerable	Near Threatened	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DoE 2014a)
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Vulnerable	Vulnerable	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPaC 2013b)
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	Migratory	Critically Endangered	N/A
Centrophorus zeehaani (previously known as *Centrophorus uyato)*	Little gulper shark, southern dogfish	Conservation Dependant	N/A	N/A	N/A	Endangered	Commonwealth Listing Advice on *Centrophorus zeehaani* (southern dogfish) (Threatened Species Scientific Committee 2013a)
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	Migratory	Endangered	N/A
Isurus paucus	Longfin mako	N/A	Migratory	Marine	Migratory	Endangered	N/A
Lamna nasus	Porbeagle shark, mackerel shark	N/A	Migratory	Marine	Migratory	Vulnerable	N/A

[5] Threatened and Priority Fauna List – July 2025 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 21/05/2026).
[6] International Union for Conservation of Nature (IUCN), 2026. The IUCN Red List of Threatened Species. Version 2025-2. https://www.iucnredlist.org (accessed on 21/05/2026).

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			*Biodiversity Conservation Act 2016* (BC Act) (WA)[5]	IUCN Red List (non-statutory)[6]	EPBC Act Part 13 statutory instrument
		Threatened status	Migratory status	Listed	Conservation status	Global status	
Glyphis garricki	Northern river shark	Endangered	N/A	Marine	Priority	Vulnerable	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015b) Conservation Advice for *Glyphis garricki* (northern river shark) (DoE 2014b)
Sphyrna lewini	Scalloped hammerhead	Conservation Dependant	N/A	N/A	N/A	Critically Endangered	Listing Advice for *Sphyrna lewini* (scalloped hammerhead) (Threatened Species Scientific Committee 2024)
Glyphis glyphis	Speartooth shark	Critically Endangered	N/A	N/A	N/A	Vulnerable	Approved Conservation Advice for *Glyphis glyphis* (speartooth shark) (DoE 2014c)
Manta alfredi	Reef manta ray	N/A	Migratory	Marine	Migratory	Vulnerable	N/A
Manta birostris	Giant manta ray	N/A	Migratory	Marine	Migratory	Endangered	N/A
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Critically Endangered	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015b) Conservation Advice for *Pristis clavata* (dwarf sawfish) (DEWHA 2009b)
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015b)
Pristis pristis	Largetooth (freshwater) sawfish	Endangered	Migratory	Marine	Priority	Critically Endangered	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015b) Conservation Advice for *Pristis pristis* (largetooth sawfish) (DCCEEW 2025a)
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Migratory	Endangered	Conservation Advice *Rhincodon typus* whale shark (Threatened Species Scientific Committee 2015d)

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6.2.1 Fish

The PMST report identified 53 Syngnathidae and Solenostomidae EPBC Act listed marine species within the NWMR. Table 6-3 describes the Syngnathidae and Solenostomidae families.

Table 6-3: Information about the EPBC Act listed threatened fish species that may, likely or are known to occur within the NWMR

Family	Preferred habitat and diet	Habitat location
Syngnathidae and Solenostomidae	The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and seadragons. Along with syngnathids, members of the related Solenostomidae family (ghost pipefishes) are also found in the NWMR (DSEWPaC 2012a). Syngnathids live in nearshore and inner shelf habitats, usually in shallow coastal waters, among seagrasses, mangroves, coral reefs, macroalgae-dominated reefs, and sand or rubble habitats (Dawson 1985; Lourie *et al.* 1999; Lourie *et al.* 2004; Vincent 1996). Two listed marine species, the winged seahorse (*Hippocampus alatus*) and western pipehorse (*Solegnathus sp. 2*) have been identified in deeper waters of the NWMR (up to 200 m) (DSEWPaC 2012a). However, these species were not identified by the PMST for the NWMR.	Knowledge about the distribution, abundance and ecology of both syngnathids and solenostomids in the NWMR is limited. No BIAs for syngnathids and solenostomids have been identified in the NWMR.

6.2.2 Sharks and sawfishes

Table 6-4 details the shark, river shark and sawfish species that may, likely or are known to occur within the NWMR.

BIAs are identified within the NWMR for the whale shark, freshwater sawfish, green sawfish and dwarf sawfish. See Table 6-6.

Table 6-4: Information about the EPBC Act listed threatened shark and sawfish species that may, likely or are known to occur within the NWMR

Species	Preferred habitat and diet	Habitat location
Dwarf sawfish	Preferred habitat[1]: Shallow (up to 20 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens *et al.* 2008; Kyne *et al.* 2015). Diet: Shoaling fish such as mullet, molluscs and small crustaceans (Cliff and Wilson 1994).	Northern Australia is considered a stronghold for sawfish (*Pristis* sp.). With observations generally higher in numbers in the western coastal regions of the NT compared to the south-western Gulf of Carpentaria region (Udyawer *et al.* 2025). Literature indicates the most southern range for the dwarf sawfish is Port Hedland (Bateman *et al.* 2024). See Table 6-6 for the BIA summary for the dwarf sawfish.
Green sawfish	Preferred habitat[1]: Inshore coastal environments including estuaries, river mouths, embayments, and along sandy and muddy beaches, as well as offshore marine habitat (Stevens *et al.* 2005; Thorburn *et al.* 2003). They are found at depths of up to 70 m (Kyne *et al.* 2021). Diet: Schools of baitfish and prawns (Poganoski *et al.* 2002), molluscs and small crustaceans (Cliff and Wilson 1994).	Northern Australia is considered a stronghold for sawfish (*Pristis* sp.). With observations generally higher in numbers in the western coastal regions of the NT compared to the south-western Gulf of Carpentaria region (Udyawer *et al.* 2025). An aggregation of green sawfish (*Pristis zijsron*) has been identified in the Garig Gunak Barlu National Park (Cobourg Peninsula, NMR). Davies *et al. (*2022) suggest this may be a nursery area. The Ashburton River Estuary (Onslow region) has been recorded as a nursery site, with juveniles also observed along the Pilbara coast and Exmouth Gulf (Bateman *et al.* 2024). See Table 6-6 for the BIA summary for the green sawfish.

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Species	Preferred habitat and diet	Habitat location
Grey nurse shark (west-coast population)	Preferred habitat: Most found in temperate waters on, or near, the bottom of the continental shelf (McAuley 2004; Kyne *et al*. 2021), around coral rocky reefs that span from inshore surf zones to the outer continental reef. They are generally found in depths between 10 and 40 m, with reported maximum depths of 230 m (Krause and Stow 2025). Diet: A variety of teleost and elasmobranch fishes and some cephalopods (Gelsleichter *et al*. 1999; Smale 2005).	Movement patterns of the western subpopulation are unclear (McAuley 2004) and key aggregation sites have not been formally identified within the NWMR (Chidlow *et al*. 2006). The known distribution for the western population extends from the SA border up to Exmouth (Krause and Stow 2025). The NWMR represents the northern limit of the west-coast population. Sighting and bycatch data have indicated grey nurse sharks are present near Exmouth and Shark Bay between May to December (Hoschke *et al*. 2023). Grey nurse sharks have also been recorded around the tropical reefs of Browse Island, and anecdotal sightings from the Arafura Sea. In addition, one individual has been recorded in trawling nets off the north-west coast of the Tiwi Islands, NT (Krause and Stow 2025).
Largetooth (freshwater) sawfish	Preferred habitat: Sandy or muddy bottoms of shallow coastal waters, estuaries, river mouths and freshwater rivers, and isolated water holes. Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson 1994).	Northern Australia is considered a stronghold for the sawfish (*Pristis sp.*), with observations generally higher in numbers in the western coastal regions of the NT compared to the south-western Gulf of Carpentaria region (Udyawer *et al*. 2025). The largetooth sawfish has a wide Northern Australia range (Kyne *et al*. 2021). The Kimberley region, particularly the Fitzroy River, is identified as an important nursery site (Bateman *et al*. 2024). The Exmouth Gulf represents the approximate southern limit for the largetooth (freshwater) sawfish, although there are a few historical records further south (Bateman *et al*. 2024). See Table 6-6 for the BIA summary for the largetooth (freshwater) sawfish.
Little gulper shark	Preferred habitat: the little gulper shark are found in waters on the upper continental slopes and undertake diel migrations across their depth ranges from relatively deep depths during the day to shallower feeding depths at night (Threatened Species Scientific Committee 2013a). Diet: Primarily fish and invertebrates, with lanternfish and squid being the primary prey (Threatened Species Scientific Committee 2013a).	The little gulper shark may occur within the NWMR, however the species is primarily associated with continental slope habitats of southern Australia, including New South Wales, Tasmania, South Australia and south-west Western Australia, typically occurring at depths greater than 400 m (White et al 2008)
Longfin mako	Preferred habitat: A pelagic species with a wide-ranging, patchy, oceanic distribution in tropical and temperate seas (Mollet *et al.* 2000; Kyne *et al.* 2021). They have been recorded at depth ranges of 0 to 1,752 m (Kyne *et al.* 2021). Diet: Primarily teleost fishes and cephalopods (mainly squid) (Last and Stevens 2009).	Records for longfin mako sharks are sporadic and their complete geographic range is not well known (Reardon *et al.* 2006). Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for the NWMR.

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Species	Preferred habitat and diet	Habitat location
Mackerel/ porbeagle shark	Preferred habitat: The porbeagle shark primarily inhabits offshore waters around the edge of the continental shelf. They occasionally move into coastal waters, but these movements are temporary (Campana and Joyce 2004; Francis *et al.* 2002). The porbeagle shark is known to dive to depths exceeding 1,300 m (Campana *et al.* 2010; Saunders *et al.* 2011). Depth range records are 0 to 370 m (Kyne *et al.* 2021). Diet: Primarily teleost fish, elasmobranchs and cephalopods (primarily squid) (Joyce *et al.* 2002; Last and Stevens 2009).	In Australia, the species occurs in waters from southern Queensland to south-west Australia (Last and Stevens 2009). Distribution within the NWMR is unknown, but there are several records for this species within the NWS (Atlas of Living Australia, 2020).
Narrow sawfish	Preferred habitat[1]: Shallow coastal, estuarine and riverine habitats, but it may occur in waters up to 40 m deep (D'Anastasi *et al.* 2013). Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson 1994).	Northern Australia is considered a stronghold for sawfish (*Pristis* sp.), with observations generally higher in numbers in the western coastal regions of the NT compared to the south-western Gulf of Carpentaria region (Udyawer *et al.* 2025). This species has been found in shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens 2009).
Northern river shark	Preferred habitat[1]: Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans *et al.* 2009; Thorburn and Morgan 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans *et al.* 2009). Depth range of up to 23 m (Kyne *et al.* 2021). Diet: A variety of fish and crustaceans (Stevens *et al.* 2005).	Northern Australia is considered a stronghold for river sharks (*Glyphis sp.),* with observations generally higher in numbers in the western coastal regions of the NT compared to the south-western Gulf of Carpentaria region (Udyawer *et al.* 2025). The northern river shark has a relatively restricted northern Australian range (although with an extent of occurrence >20,000 km²) (Kyne *et al.* 2021). Within the NWMR records have come from both the West and East Kimberley, including King Sound, the Ord and King rivers, West Arm of Cambridge Gulf and from Joseph Bonaparte Gulf (Thorburn and Morgan 2004; Stevens *et al.* 2005; Thorburn 2006; Field *et al.* 2008; Pillans *et al.* 2008, Whitty *et al.* 2008; Wynen et al. 2008).
Oceanic whitetip shark	Preferred habitat: The oceanic whitetip shark is globally distributed in warm-temperate and tropical oceans (Andrzejaczek *et al.* 2018). The species may occur in tropical and subtropical offshore and coastal waters around Australia. They primarily occupy pelagic waters in the upper 200 m of the water column; however, they have been observed diving to depths of around 1,000 m, potentially associated with foraging behaviour (Howey-Jordan *et al.* 2013; D'Alberto *et al.* 2017). The species is highly migratory, travelling large distances between shallow reef habitats in coastal waters and oceanic waters (Howey-Jordan *et al.* 2013). The species does exhibit a strong preference for warm and shallow waters above 120 m. Diet: Opportunistic feeders that generally target a variety of finfishes and pelagic squid, depending on habitat. Targets pelagics such as tuna in open ocean, as noted by the large bycatch numbers in the longline fisheries.	Given its migratory nature, this species most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.

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Species	Preferred habitat and diet	Habitat location
Scalloped hammerhead	Preferred habitat: In northern Australia, juveniles inhabit inshore environments while adults typically occur in deeper waters near the edge of the continental shelf. Pregnant females will move to shallow nursery areas to give birth. The scalloped hammerhead is found in waters ranging from the surface to depths of at least 275 m. The species has also been recorded at a depth of 1,042 m (Threatened Species Scientific Committee 2024).	In WA, the scalloped hammerhead is recorded along the northern coastline to about 34°S (Geographe Bay). It is suggested a high proportion of adult females may migrate from Australia to Indonesia and Papua New Guinea waters, and return to give birth in coastal nursery areas in northern Australia (Threatened Species Scientific Committee 2024).
Shortfin mako	Preferred habitat: The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet *et al.* 2000). Tagging studies indicate shortfin makos spend most of their time in water less than 50 m deep but with occasional dives up to 880 m (Abascal *et al.* 2011; Stevens et al. 2010). Satellite telemetry suggests shortfin makos have multiple movement phases, displaying both high connectivity between Australian populations and periods of residency (Corrigan *et al.* 2018). Diet: Feeds on a variety of prey, such as teleost fishes, other sharks, marine mammals and marine turtles (Campana *et al.* 2005).	Given its migratory nature, this species most likely has a broad distribution within the NWMR. No BIAs identified for the NWMR.
Speartooth shark	Speartooth sharks are elasmobranchs that can inhabit and move between freshwater and marine environments (DoE 2014c). Juveniles and sub-adults have been observed to inhabit large tropical river systems, while adults are assumed to live outside of rivers in coastal marine areas, due to their physiological and life history similarities with bull sharks (DoE 2014c).	The speartooth shark is a medium sized shark found in tidal rivers and estuaries within the NT, northern WA and Queensland (DoE 2014c). Speartooth sharks have been recorded in tidal rivers and estuaries (Pillans *et al.* 2009). Data on a small number of speartooth sharks indicate this species has tidally influenced movement patterns (Pillans *et al.* 2009). Within Australia, speartooth sharks are known to occur in four distinct locations: Cambridge Gulf in WA; Van Diemen Gulf drainage in the NT, including the Adelaide River, South, East and West Alligator Rivers and Murganella Creek; Port Musgrave in Queensland, including the Wenlock and Ducie Rivers; and the Princess Charlotte Bay area of Eastern Cape York (Field *et al.* 2008, Pillans *et al.* 2009).

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Species	Preferred habitat and diet	Habitat location
Whale shark	Preferred habitat: Whale sharks have a widespread distribution in tropical and warm temperate seas, throughout oceanic and coastal Australian waters (Last and Stevens 2009). Diet: Whale sharks are planktivorous and feed on various planktonic species, including krill, jellyfish, and crab larvae (Last and Stevens 2009). At Ningaloo Reef, whale shark habitat use is strongly driven by fine-scale prey availability, with whale sharks concentrating in reef-edge areas where complex bathymetry and local oceanographic processes aggregate zooplankton. While elevated prey density drives horizontal space use, whale sharks' vertical movements are not tightly coupled to prey depth distributions, indicating that prey availability influences foraging locations but does not directly govern diving behaviour (D'Antonio *et al.* 2024).	Ningaloo Reef is the main known aggregation site for whale sharks in Australian waters and has the largest density of whale sharks per kilometre in the world (Martin 2007). A study by D'Antonio *et al.* (2025) investigated the influence of geomorphological features and oil and gas platforms on the broad-scale movement patterns and habitat connectivity of whale sharks across the eastern Indian Ocean and the north-west of Australia. Satellite telemetry from 78 whale sharks tagged between 2005 and 2019 during their seasonal aggregations in coastal waters at Ningaloo Reef and at Shark Bay during the austral autumn and winter were used to identify movement patterns and habitat connectivity. Geomorphological features such as pinnacles, canyons and seamounts promoted habitat connectivity and strongly influenced the habitat use of whale sharks across regional and local spatial scales. Oil and gas platforms were observed to have a similar effect on habitat use as natural feature types and enhanced habitat connectivity. The platforms most visited by whale sharks were situated near the edge of the continental shelf and near natural geomorphological features that likely enhance productivity, and were likely used as migratory stepping stones (D'Antonio *et al.* 2025). Satellite tracking at Ningaloo Reef showed whale shark distribution ranged widely across the eastern Indian Ocean, spending more than 90% of their time in epipelagic waters (≤200 m) while also performing occasional deep dives to bathypelagic depths (about 1,900 m). Geographical and vertical habitat use differed between sexes, with females more likely to occupy offshore areas, use deeper waters, and prefer cooler sea-surface temperatures than males. In contrast, males displayed more consistent space and depth use with warmer (<28 °C), coastal shelf waters (Bignell *et al.* 2025). Acoustically tagged whale sharks have been detected on the NWS in June, July and October to January (Thomson *et al.* 2021). Satellite tagging and sightings of whale sharks off the WA coast indicate that while whale sharks aggregate in higher numbers at Ningaloo Reef seasonally, they may be present year-round (Norman *et al.* 2017). See Table 6-6 for the BIA summary for the whale shark.

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Species	Preferred habitat and diet	Habitat location
White shark	Preferred habitat: The species typically occurs in temperate coastal waters between the shore and the 100 m depth contour; however, adults and juveniles have been recorded diving to depths of 1,000 m (Bruce *et al.* 2006; Bruce 2008). Diet: Smaller white sharks (less than 3 m length) feed primarily on teleost and elasmobranch fishes, broadening their diet as larger sharks to include marine mammals (Last and Stevens 2009).	There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North West Cape, in low densities (DSEWPaC 2012a). Given its migratory nature, this species most likely has a broad distribution within the NWMR. No BIAs identified for the NWMR.

1. *Preferred habitat as described within the Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia 2015b).*

6.2.3 Rays

Rays are commonly found in the NWMR. Two listed and migratory species are known to occur within this region: the reef manta ray and giant manta ray.

No BIAs for either the reef or giant manta ray species have been identified in the NWMR.

Table 6-5: Information about migratory ray species within the NWMR

Species	Preferred habitat and diet	Habitat location
Reef manta ray	Preferred habitat: The reef manta ray is commonly sighted within productive nearshore environments, such as island groups, atolls or continental coastlines. However, the species has also been recorded at offshore coral reefs, rocky reefs and seamounts (Marshall *et al.* 2009). Recorded depth range of 0 to 432 m (Kyne *et al.* 2021). Diet: Feeds on planktonic organisms, including krill and crab larvae.	A resident population of reef manta rays has been recorded at Ningaloo Reef. No BIAs identified for the NWMR.
Giant manta ray	Preferred habitat: The species primarily inhabits nearshore environments along productive coastlines with regular upwelling, but they appear to be seasonal visitors to coastal or offshore sites, including offshore island groups, offshore pinnacles and seamounts (Marshall *et al.* 2011). Recorded depth range of up to 1,000 m (Kyne *et al.* 2021). Diet: Feeds on planktonic organisms, including krill and crab larvae.	The Ningaloo coast is an important area for giant manta rays from March to August (Preen *et al.* 1997). No BIAs identified for the NWMR.

6.3 Fish, shark and sawfish biologically important areas in the NWMR

A review of the Australian Marine Spatial Information System (Geoscience Australia, 2026) identified BIAs for four species of fish, shark and sawfish – whale shark, largetooth (freshwater) sawfish, green sawfish and dwarf sawfish – within the NWMR. The BIAs for the whale shark and the sawfish species include foraging, nursing, juvenile and pupping areas. Table 6-6 describes these.

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Table 6-6: Fish, whale shark and sawfish BIAs within the NWMR (Source: Geoscience Australia, 2026)

Species	Woodside activity area			BIAs			
	Browse	***NWS/ Scarborough***	***North West Cape***	***Reproduction – pupping***	***Reproduction – nursing***	***Juvenile***	***Foraging***
Whale shark	✓	✓	✓	-	-	-	Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (Mar to Jul) Foraging northward from Ningaloo along the 200 m isobath (Jul to Nov)
Green sawfish	✓	✓	-	Pupping in Cape Keraudren (in summer in a narrow area adjacent to the shoreline) Pupping in Willie Creek Pupping in Roebuck Bay Pupping in Cape Leveque Pupping in waters adjacent to Eighty Mile Beach Pupping (likely) in Camden Sound	Nursing in Cape Keraudren Nursing in waters adjacent to Eighty Mile Beach	-	Foraging in Cape Keraudren Foraging in Roebuck Bay Foraging in Cape Leveque Foraging in Camden Sound
Largetooth (freshwater) sawfish	✓	✓	-	Pupping in the mouth of the Fitzroy River (Jan to May) Pupping in Roebuck Bay (Jan to May) Pupping likely in waters adjacent to Eighty Mile Beach (Jan to May)	Nursing (likely) in King Sound	Waters adjacent to Eighty Mile Beach Roebuck Bay	Foraging in the mouth of the Fitzroy River (Jan to May) Foraging in King Sound and Roebuck Bay (Jan to May) Foraging in waters adjacent to Eighty Mile Beach
Dwarf sawfish	✓	✓	-	Pupping in King Sound Pupping in waters adjacent to Eighty Mile Beach	Nursing in King Sound Nursing waters adjacent to Eighty Mile Beach	King Sound	Foraging in King Sound Foraging in Camden Sound Foraging in waters adjacent to Eighty Mile Beach

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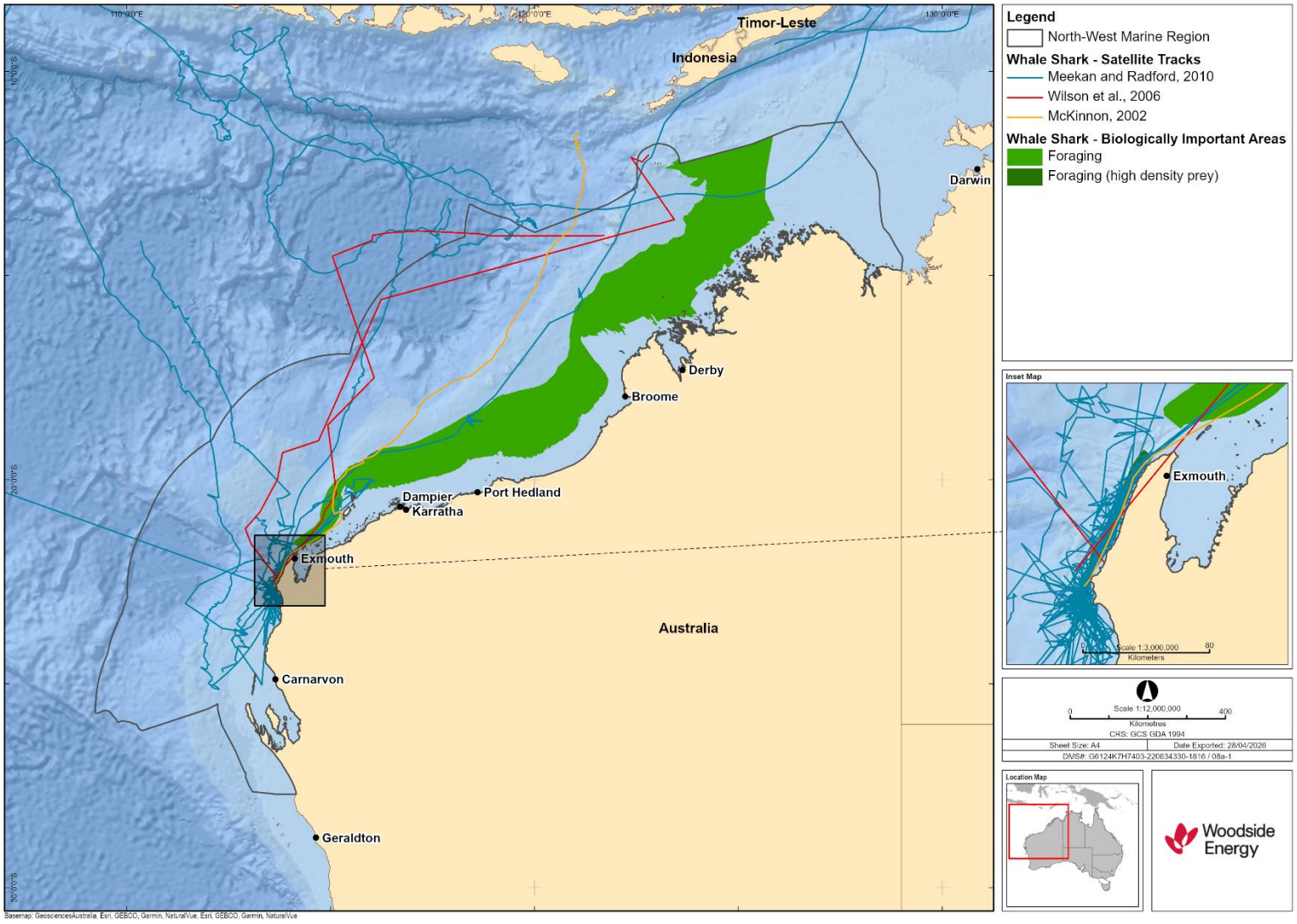


Figure 6-1: Whale shark biologically important areas (BIAs) for the NWMR and tagged whale shark satellite tracks

Source for BIAs: DCCEEW (2025b)

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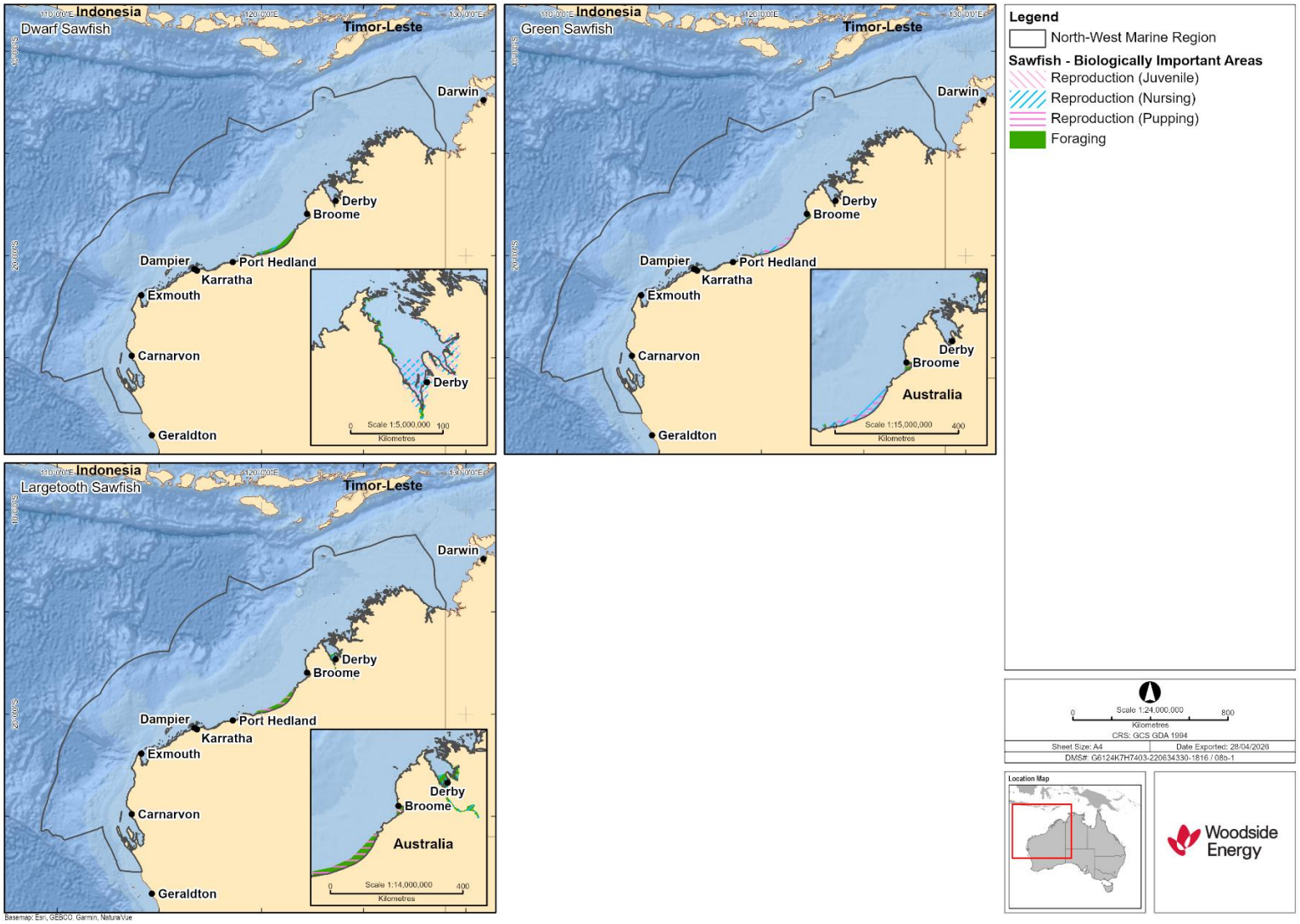


Figure 6-2: Sawfish BIAs for the NWMR

Source: DCCEEW (2025b)

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7. MARINE REPTILES

7.1 Regional context

The NWMR and NMR contain important habitat for listed marine reptiles, including areas that support key life stages such as nesting, internesting, migration and foraging for marine turtle species, and habitats supporting resident sea snake, crocodile, and water monitor (NWMR only) populations. Habitats within the SWMR also support marine reptiles; however, these are primarily associated with foraging marine turtle species.

Six of the seven marine turtle species occurring globally are in Australian waters, of which all six – the green, hawksbill, loggerhead, flatback, leatherback and olive ridley turtle – occur in the NWMR and NMR. Four species of marine turtles – the green, loggerhead, flatback and leatherback turtle – have known distribution within the SWMR (see PMST report in Appendix A). However, no known nesting areas exist within the SWMR region (DSEWPaC 2012b).

The PMST report (Appendix A) identified a total of 12 EPBC Act listed threatened or migratory reptile species, including marine turtles, sea snakes, water monitors and crocodiles, within the NWMR. An additional 23 EPBC Act listed marine sea snake species that do not have a threatened or migratory status were recorded within the NWMR. Appendix A contains a full list.

The PMST report identified a total of ten EPBC Act listed threatened or migratory reptile species within the NMR. An additional 28 EPBC Act listed marine sea snake and sea krait species that do not have a threatened or migratory status were recorded within the NMR. Appendix A contains a full list.

The PMST report identified a total of four EPBC Act listed threatened or migratory marine turtle species within the SWMR. Appendix A contains a full list.

7.2 Marine reptiles in the NWMR

The next subsections focus on the listed marine reptile species known to occur within the NWMR.

Table 7-1 outlines the threatened and migratory marine reptile species that may, are likely or are known to occur within the NWMR, with their conservation status and relevant recovery plans and conservation advice.

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Table 7-1: Threatened and migratory marine reptile species identified by the EPBC Act PMST that may, likely or are known to occur within the NWMR

Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[7]	IUCN Red List (non-statutory)[8]	EPBC Act Part 13 statutory instrument
		Threatened status	Migratory status	Listed	Conservation status	Global status	
Aipysurus apraefrontalis	Short-nosed sea snake	Critically Endangered	N/A	Marine	Critically Endangered	Data Deficient	Approved Conservation Advice for *Aipysurus apraefrontalis* (short-nosed sea snake) (DSEWPaC 2011a)
Aipysurus foliosquama	Leaf-scaled sea snake	Critically Endangered	N/A	Marine	Critically Endangered	Data Deficient	Approved Conservation Advice for *Aipysurus foliosquama* (leaf-scaled sea snake) (DSEWPaC 2011b)
Aipysurus fuscus	Dusky sea snake	Endangered	N/A	Marine	N/A	Endangered	Conservation Advice for *Aipysurus fuscus* (dusky sea snake) (DCCEEW 2024m)
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	N/A	Least Concern	N/A
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017)
Chelonia mydas	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	Least Concern	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	Vulnerable	Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017) Approved Conservation Advice for *Dermochelys coriacea* (leatherback turtle) (DEWHA 2009c)
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	Critically Endangered	Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017)
Lepidochelys olivacea	Olive ridley turtle	Endangered	Migratory	Marine	Endangered	Vulnerable	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	Data Deficient	

[7] Threatened and Priority Fauna List – July 2025 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 21/05/2026).
[8] IUCN, 2026. The IUCN Red List of Threatened Species. Version 2025-2. https://www.iucnredlist.org (accessed on 21/05/2026).

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[7]	IUCN Red List (non-statutory)[8]	EPBC Act Part 13 statutory instrument
		Threatened status	Migratory status	Listed	Conservation status	Global status	
Varanus mertensi	Mertens' water monitor	Endangered	N/A	N/A	Endangered	Endangered	Conservation Advice for *Varanus mertensi* (Mertens' water monitor) (DCCEEW 2023i)
Varanus mitchelli	Mitchell's water monitor	Critically Endangered	N/A	N/A	Critically Endangered	Critically Endangered	Conservation Advice for *Varanus mitchelli* (Mitchell's water monitor) (DCCEEW 2023c)

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7.2.1 Marine turtles

The PMST report (Appendix A) identified six species of threatened and migratory (three Vulnerable and three Endangered) EPBC Act listed marine turtles within the NWMR: the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles (see Table 7-1).

The NWMR supports globally significant breeding populations of four marine turtle species: the green, hawksbill, flatback and loggerhead turtles. Olive ridley turtles are known to forage within the NWMR, but there are only occasional records of the species nesting in the region. Leatherback turtles regularly forage over Australian continental shelf waters within the NWMR, but there are also no records of the species nesting in the region (DSEWPaC 2012a).

Marine turtles are highly migratory during non-reproductive life phases and have high site fidelity during breeding and nesting life phases. They spend most of their lives in the ocean, with only adult female marine turtles coming ashore to lay eggs in the sand above the high-water mark on natal beaches (Commonwealth of Australia 2017). Figure 7-1 summarises the generalised life cycle of marine turtles. Species-specific life cycle information is outlined within the Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia 2017).

Discrete genetic stocks have evolved within each marine turtle species. This is the result of marine turtles returning to where they hatched. These genetically distinct stocks are defined by the presence of regional breeding aggregations. Stocks are composed of multiple rookeries in a region and are delineated by where there is little or no migration of individuals between nesting areas. Turtles from different stocks typically overlap at feeding grounds (Commonwealth of Australia 2017). There are 17 genetic stocks across both the NWMR and NMR – nine in the NWMR, six in the NMR, and two overlapping both regions. Of these, 11 are known to occur within Woodside's three activity areas. Table 7-2 describes key information about marine turtles within the NWMR.

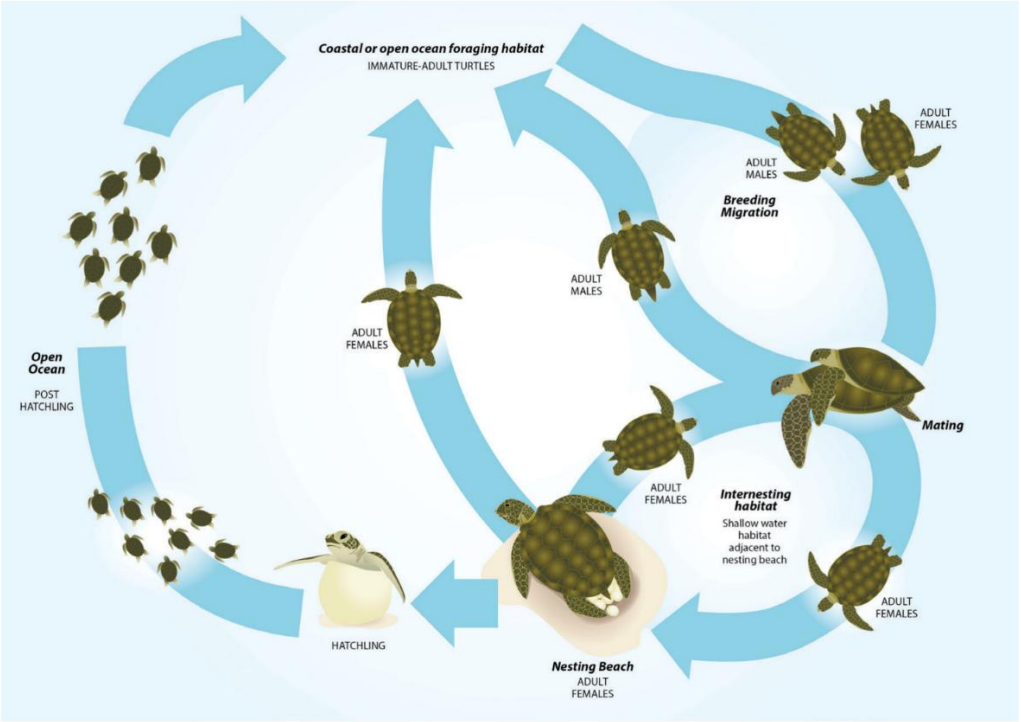


Figure 7-1: Generalised life cycle of marine turtles

Source: Commonwealth of Australia (2017)

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Table 7-2: Marine turtle key information within the NWMR

Species/ genetic stock	Woodside activity area			Key information
	Browse	***NWS/ Scarborough***	***North West Cape***	
Flatback turtle				
Distribution: There are five stocks of flatback turtles described in Australian waters. Note, the extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Flatback turtles forage in waters across the Australian continental shelf and into the continental waters off Indonesia and Papua New Guinea. The flatback turtle is found in the tropical waters of northern Australia, Papua New Guinea and Irian Jaya. It is one of the only two species of marine turtle without a global distribution (Limpus 2007). Nesting is known to only occur in Australia for this species. Diet: Juvenile flatback turtles feed on gastropods, molluscs, squid and siphonophores. Limited data indicate cuttlefish, hydroids, soft corals and jellyfish also form part of the juvenile flatback diet. During the adult stage, they are primarily carnivorous, foraging on soft-bodies invertebrates (Commonwealth of Australia 2017).				
Cape Domett stock (F-CD)	✓	-	-	Cape Domett is an important high density nesting area (Tucker *et al.* 2021). Combined with a smaller site at Lacrosse Island, the F-CD stock is one of the largest flatback turtle stocks in Australia. Average nesting abundance at Cape Domett is estimated at 3,250 females per year (Whiting *et al.* 2008). Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an internesting buffer of 60 km radius around these rookeries, year-round with peak internesting activity occurring August to September (Commonwealth of Australia 2017). Extending further than the habitat critical internesting buffer, an internesting buffer BIA of 60 km is at Cape Domett and Lacrosse Island.
Pilbara stock (F-Pil)	-	✓	✓	The major rookeries for the F-Pil stock are on the eastern coast of Barrow Island and at Mundabullangana Station near Cape Thouin on the mainland (greater than 500 km south of Broome) (Limpus 2006) and Delambre Island (Commonwealth of Australia 2017). This stock also nests on many islands in the Pilbara and southern Kimberley, including Thevenard, Varanus, Muiron Islands and Montebello group. The Dampier Archipelago contains several regionally significant flatback turtle rookeries and forms part of the core nesting distribution of the F-Pil stock (Fossette *et al.* 2021b). These areas are designated habitat critical for the F-Pil stock and include an internesting buffer of 60 km radius around these rookeries from October to March. A study using aerial photogrammetry showed nesting beaches were spread across the Pilbara from Y Island (Exmouth Gulf) in the south-west, to Bedout Island in the north and Mulla Mulla Downs Creek in the east (Fossete *et al.* 2021b). Extending further than the habitat critical internesting buffer, a year-round internesting buffer BIA of 60 km is north and north-west of the Montebello Islands. However, use level for this BIA has been defined as very low (Commonwealth of Australia 2017). Satellite tracking data by Whittock *et al.* (2016) found flatback turtles displayed varying internesting movements, with distances travelled ranging between 3.4 and 62.1 km upwards along the coast. Nearshore behaviour was displayed across all Pilbara rookeries, with a consistent occurrence of tagged individuals remaining <10 km of nesting beaches during the internesting period (Whittock *et al.* 2016). Flatbacks exhibit high fidelity to nesting beaches during periods of nesting attempts (Whittock *et al.* 2016; Peel *et al.* 2024).

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Species/ genetic stock	Woodside activity area			Key information
	Browse	*NWS/ Scarborough*	*North West Cape*	
				Post-nesting satellite tracking indicates foraging occurs along the WA coast in water shallower than 130 m and within 315 km of shore (Commonwealth of Australia 2017).
South-west Kimberley stock (F-swKim)	✓	✓	-	Eighty Mile Beach and Eco Beach are important nesting areas, with nesting occurring year round but peaking in December to January. These areas are designated habitat critical for the stock and include an internesting buffer of 60 km radius around these rookeries from October to March. Juveniles are likely to remain in waters over the Australian continental shelf after hatching. Flatback turtles are usually found around soft sediment habitat that supports benthic invertebrates. Important foraging habitats are not identified for this species (Commonwealth of Australia 2017).
Green turtle				
Distribution: Green turtles are distributed across nine genetically distinct stocks in Australian waters off WA, the NT and Queensland, with limited numbers in New South Wales, Victoria and SA (Commonwealth of Australia 2017). Diet: During their pelagic juvenile stage, green turtles feed on algae, pelagic crustaceans and molluscs. They are primarily herbivorous during their adult stage, foraging on algae, seagrass and mangroves. However, some green turtles maintain a considerable carnivorous component to their diets (Commonwealth of Australia 2017).				
Ashmore Reef stock (G-AR)	✓	-	-	The G-AR stock nests in the Ashmore Reef and Cartier Island AMP areas. Population estimates are not available for Ashmore Reef, although annual breeding numbers are thought to be in the low hundreds (Whiting 2000). Designated habitat critical for the G-AR stock are the nesting locations of Ashmore Reef and Cartier Reef, and an internesting buffer of 20 km radius around these rookeries, year-round with peak internesting activity occurring December to January (refer Table 6 of the Recovery Plan). Juvenile and adult turtles forage within the tidal/subtidal habitats of offshore islands and coastal waters with coral reef, mangrove, sand, rocky reefs and mudflats where there are algal turfs or seagrass meadows (Commonwealth of Australia 2017).
NWS stock (G-NWS)	-	✓	✓	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at about 20,000 individuals (DSEWPaC 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia 2017). Major rookeries of the G-NWS stock within the NWS/Scarborough activity area are at Lacepede Islands, Montebello Islands and Barrow Island (Tucker *et al.* 2021), with minor rookeries at Boodie, Middle, Serrurier, Thevenard, Lowendal, Rosemary, Legendre and Delambre islands (Commonwealth of Australia 2017). These areas are designated habitat critical for survival of the stock and include an internesting buffer of 20 km radius around these rookeries from November to March. Major rookeries for the G-NWS stock located within the North West Cape Woodside activity area include the North West Cape and Muiron Islands (Commonwealth of Australia 2017). Located on the mainland coast of

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Species/ genetic stock	Woodside activity area			Key information
	Browse	*NWS/ Scarborough*	*North West Cape*	
				the North West Cape, this area is designated habitat critical for the stock and includes an internesting buffer of 20 km radius around the rookery from November to March. A 2018 survey, including on-beach monitoring of the Muiron Islands and Ningaloo Coast from North West Cape to Bungelup (Rob *et al.* 2019), supports the concept that North West Cape and the Muiron Islands are major important nesting areas for green turtles, as identified in the Recovery Plan (Commonwealth of Australia 2017). For the 2024–25 Ningaloo Turtle Program season, green turtles were the most active species in the North West Cape division, accounting for 97.08% of total turtle activity (Department of Biodiversity, Conservation and Attractions (DBCA) 2025). The number of green turtle nests has varied among the years since the program began in 2002 (ranging from 1.06 to 18.13 nests per subsection per day), with a long-term average of about 6.16. The average number of green turtle nests recorded during the 2024–25 peak season was slightly above average at 6.6 nests per subsection per day, ranking as the seventh highest out of 23 seasons that have been monitored (DBCA 2025). Long-term trends indicate several clear peaks in activity since the program began, including 2011–12, 2020–21 and 2023–24, where nesting activity was about 2.5 to 11 times greater than lower-activity seasons (DBCA 2025). All seasons coincided with La Niña weather patterns (DBCA 2021).
Scott Reef-Browse Island stock (G-ScBr)	✓	-	-	The G-ScBr stock is a genetically discrete stock known to nest at only two locations within the north-east Indian Ocean – Sandy Islet and Browse Island. There are currently very limited data available for the G-ScBr stock, so population numbers are not known (Commonwealth of Australia 2017). Designated habitat critical for the G-ScBr stock are the nesting locations of Sandy Islet and Browse Island, and an internesting buffer of 20 km radius around these rookeries, for the period November to March (see Table 6 of the Recovery Plan). Surveys conducted at Scott Reef in 2006, 2008 and 2009 indicate the summer months from late November to February are the preferred breeding season for green turtles at Sandy Islet (Guinea 2009). Satellite tagging studies (Pendoley 2005; Guinea 2011) have provided an indication of the behaviour and migratory routes of adult green turtles leaving Scott Reef. Most animals appear to swim through South Reef lagoon and disperse toward the WA mainland via two distinct post-nesting migration pathways: travelling east and north toward the Bonaparte Archipelago then north along the coast to foraging areas in NT waters, or travelling south to Cape Leveque then south along the coast to the Turtle Islands off the mouth of the De Grey River in the Pilbara region (Ferreira *et al.* 2021).

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Species/ genetic stock	Woodside activity area			Key information
	Browse	***NWS/ Scarborough***	***North West Cape***	
Hawksbill turtle				
Distribution: There are three genetic stocks of hawksbill in Australia with distribution occurring across northern and eastern Australia and widely within the NWMR, with most of the H-WA stock in the Pilbara. Hawksbill turtles forage in pelagic environments during the first five to ten years of their life cycle. Upon reaching maturity, they return to their hatching location to settle in tropical tidal and subtidal coral and rocky reef habitats (Commonwealth of Australia 2017). They have also been found within seagrass habitats of coastal waters and deeper habitats, although less frequently. They are distributed throughout the NWS of WA (DoE 2026c). Diet: Hawksbill turtles are omnivorous, foraging on algae, sponges, soft corals and other soft-bodies invertebrates (Commonwealth of Australia 2017).				
WA genetic stock (H-WA)	✓	✓	-	Major rookeries of the H-WA stock occur in the NWS/Scarborough Woodside activity area at islands within the Dampier Archipelago (particularly Rosemary Island), Delambre Island and Montebello Islands, with lower density nesting at the Lowendal Islands and Sholl Island (Limpus 2009b). These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries from October to February. Peak nesting season occurs from October to January (Commonwealth of Australia 2017). Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; about 500 to 1,000 females nest on the island annually, more than at any other WA rookery (Pendoley 2005; Pendoley *et al.* 2016). In the Browse Woodside activity area, Sandy Islet is recognised as a key nesting BIA for this species, with an internesting BIA in the surrounding waters. In 2006, a single hawksbill turtle was tagged and recaptured in 2009 on Sandy Islet (Guinea 2009). There are no other records of hawksbill turtles nesting at Scott Reef, although the Recovery Plan for Marine Turtles recognises some nesting for this species occurs at Scott Reef and Ashmore Reef (Commonwealth of Australia 2017). The hawksbill turtle is also known to occur within the Rowley Shoals Marine Park. However, the habitats within the marine park are not considered to be significant for the species (Department of Environment and Conservation (DEC) 2007a).
Leatherback turtle				
Distribution: There are potentially three leatherback genetic stocks in the Indo-Pacific. However, genetic linkages are yet to be determined for those found in Australian waters. Leatherback turtles are more commonly found foraging in waters on the east coast of Australia. Leatherbacks foraging in WA may come from nesting areas in the Andaman Sea and Indonesia. Small numbers of leatherback turtles nest along the Cobourg Peninsula in the NT and there have been unconfirmed accounts of leatherbacks nesting in WA (Commonwealth of Australia 2017). Diet: The leatherback is an oceanic species remaining planktivorous throughout its life cycle, feeding on jellyfish and large planktonic ascidians such as sea squirts in the water column (Commonwealth of Australia 2017).				

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Species/ genetic stock	Woodside activity area			Key information
	Browse	***NWS/ Scarborough***	***North West Cape***	
Nesting in Australia	✓	-	-	The leatherback turtle is the largest of all marine turtles. They are pelagic feeders and spend most of their lives in the open ocean in tropical, subtropical and temperate waters throughout the world (Limpus 2009a). Leatherback turtles have been recorded feeding in the coastal waters of all Australian states and territories. It is thought they migrate from Australian waters to breed at larger rookeries in neighbouring countries such as Indonesia, Papua New Guinea and Solomon Islands. There are no known foraging sites for this species within WA and no records of leatherback turtles nesting in WA (Commonwealth of Australia 2017).
Loggerhead turtle				
Distribution: There are two genetically distinct stocks of loggerheads in Australia, one in Queensland and one in WA. Foraging occurs in coastal areas in WA and the NT, ranging from nearshore benthic habitats to depths of 55 m (Commonwealth of Australia 2017). Diet: In the post-hatchling stage, the loggerhead feeds on algae, pelagic crustaceans and molluscs. During the adult stage, they are carnivorous, feeding primarily on benthic invertebrates (Commonwealth of Australia 2017).			
WA (LH-WA)	-	-	✓	Loggerhead turtles have a global distribution and occur throughout eastern, northern and western Australia (Limpus 2008). Major rookeries of the LH-WA stock are at Dirk Hartog Island, Muiron Islands, North West Cape and Gnaraloo Bay. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries from November to May (Commonwealth of Australia 2017). Loggerhead turtles migrate over 2,600 km between foraging and nesting areas (Limpus 2008). There has been one reported loggerhead nesting at Ashmore Reef (DoE 2026a). The LH-WA stock is one of the largest in the world (Limpus 2009c). The trend for the stock is reported as stable (Commonwealth of Australia 2017). A 2018 survey, including on-beach monitoring of the Muiron Islands and Ningaloo Coast from North West Cape to Bungelup (Rob *et al.* 2019), supports the concept that North West Cape and the Muiron Islands are major important nesting areas for loggerhead turtles, as identified in the Recovery Plan (Commonwealth of Australia 2017). The standardised level of loggerhead turtle nesting along the North West Cape was above the long-term average (0.36) for the 2022–23 season and the third highest since the Ningaloo Turtle Program began (2002), with 0.46 nests per subsection per day (DBCA 2021). Dirk Hartog Island in the Shark Bay Marine Park, with an average of 122 nests per day over 2.1 km (Reinhold and Whiting 2014), is recognised as the most important loggerhead turtle rookery in WA (Commonwealth of Australia 2016; as cited in Rob *et al.* 2019).
Olive ridley turtle				
Distribution: There are two genetic stocks in Australia, one in the NT and the other that nests on western Cape York. Low-density nesting occurs in the Kimberley and genetic relatedness is unknown. There is limited data about olive ridley individuals, but satellite tracking indicates they appear to remain on the Australian continental shelf and into waters off Indonesia. Foraging occurs in depths ranging between 15 and 200 m (Commonwealth of Australia 2017). Diet: The olive ridley turtle is primarily carnivorous, feeding on soft-bodied invertebrates including sea pens, soft corals, beche-der-mer (sea cucumbers) and jellyfish (Commonwealth of Australia 2017).			

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Species/ genetic stock	Woodside activity area			Key information
	Browse	***NWS/ Scarborough***	***North West Cape***	
Unknown genetic stock, Kimberley	✓	-	-	The olive ridley turtle is the smallest of all marine turtles. It has a global tropical and subtropical distribution and is known to forage primarily in soft-bottom habitats ranging from 6 to 35 m in nearshore locations (DSEWPaC 2012a), and offshore in depths of up to 200 m (Whiting *et al.* 2018). Olive ridley nesting is recorded as incidental and sparse in the Kimberley region (Whiting *et al.* 2018). It has been recorded nesting in WA only twice, both times in the Kimberley region (RPS Environment and Planning Pty Ltd, 2010), with most nesting occurring in the NT (Commonwealth of Australia 2017). Key nesting locations in the NT include Cape Leveque, Darcy Island, Prior Point, Llanggi and Vulcan Island (Commonwealth of Australia 2017).

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7.2.1.1 Habitat critical to survival for marine turtles

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia 2017) identifies habitat critical to the survival of a species for marine turtle stocks under the EPBC Act. Habitat critical to survival is defined by the EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance as areas necessary:

- for activities such as foraging, breeding or dispersal
- for the long-term maintenance of the species, including species essential to their survival
- to maintain genetic diversity and long-term evolutionary development
- for the reintroduction of populations or recovery of the species.

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia 2017) has identified nesting locations and associated internesting areas as habitat critical to survival for five marine turtle species within the NWMR. These are identified, described and mapped in Table 7-3 and Figure 7-2 to Figure 7-6. No habitat critical to survival of leatherback turtles has been identified within the NWMR.

Table 7-3 outlines the relevant genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR.

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Table 7-3: Genetic stock, habitat critical to survival and key life cycle stage seasonality of marine turtles within the NWMR

Species	Woodside activity area			Habitat critical to survival			
	Browse	*NWS/ Scarborough*	*North West Cape*	*Nesting (*major rookery[1])*	*Internesting buffer*	*Seasonality nesting*	*Preferred habitat[2]*
Green turtle							
NWS stock (G-NWS)	✓	✓	✓	Adele Island Maret Island Cassini Island Lacepede Islands* Barrow Island* Montebello Islands (all with sandy beaches)* Serrurier Island Dampier Archipelago Thevenard Island North West Cape* Ningaloo Coast	20 km radius	Nov to Mar (peak Dec to Feb)	Nearshore reef habitats in the photic zone
Ashmore Reef stock (G-AR)	-	-	-	Ashmore Reef* Cartier Reef*		All year (peak: Dec to Jan)	
Scott Reef-Browse Island stock (G-ScBr)	✓	-	-	Scott Reef (Sandy Islet)* Browse Island*		Nov to Mar (peak Jan to Feb)	
Hawksbill turtle							
WA stock (H-WA)	-	✓	-	Dampier Archipelago (including Rosemary Island and Delambre Island)* Montebello Islands (including Ah Chong Island, South East Island and Trimouille Island)* Lowendal Islands (including Varanus Island, Beacon Island and Bridled Island) Sholl Island	20 km radius	All year (peak: Oct to Jan)	Nearshore and offshore reef habitats

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Species	Woodside activity area			Habitat critical to survival			
	Browse	***NWS/ Scarborough***	***North West Cape***	***Nesting (*major rookery[1])***	***Internesting buffer***	***Seasonality nesting***	***Preferred habitat[2]***
Flatback turtle							
Cape Domett stock (F-CD)	-	-	-	Cape Domett* Lacrosse Island	60 km radius[3]	All year (peak: Aug to Sep)	Nearshore and offshore subtidal and soft bottomed habitats of offshore islands
South-west Kimberley stock (F-swKim)	✓	✓	-	Eighty Mile Beach* Eco Beach* Lacepede Islands		All year (peak: Dec to Jan)	
Pilbara stock (F-Pil)	-	✓	-	Montebello Islands Mundabullangana Beach* Barrow Island* Cemetery Beach Dampier Archipelago (including Delambre Island* and Huay Island) Coastal islands from Cape Preston to Locker Island		Oct to Mar (peak: Nov to Jan)	
Unknown genetic stock, Kimberley, WA	✓	-	-	Maret Islands Montilivet Islands Cassini Island Coronation Islands (includes Lamarck Island) Napier-Broome Bay Islands (West Governor Island, Sir Graham Moore Island – near Kalumbaru) Champagny, Darcy and Augustus Islands (Camden Sound)		May to Jul	

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Species	Woodside activity area			Habitat critical to survival			
	Browse	***NWS/ Scarborough***	***North West Cape***	***Nesting (*major rookery[1])***	***Internesting buffer***	***Seasonality nesting***	***Preferred habitat[2]***
Loggerhead turtle							
WA stock (LH-WA)	-	-	✓	Dirk Hartog Island* Muiron Islands* Gnaraloo Bay* Ningaloo Coast	20 km radius	Nov to Mar (peak Jan)	Nearshore and island coral reefs, bays and estuaries in tropical and warm temperate latitudes
Olive ridley turtle							
Unknown genetic stock, Kimberley, WA	✓	-	-	Cape Leveque Darcy Island Prior Point Llanggi Vulcan Island	20 km radius	May to Jul	Nearshore coastal areas; present year round over soft-bottom habitats

1. *Major rookeries as outlined in the Recovery Plan (Commonwealth of Australia 2017).*
2. *Preferred habitat as outlined in the Recovery Plan (Commonwealth of Australia 2017).*
3. *Although flatback turtles have a 60 km internesting buffer for habitat critical to survival, Whittock* et al. *(2016) reports that internesting flatback turtles (n=47) from each rookery remained in water <44 m deep, with the mean depth for all turtles at each rookery <10 m. The internesting locations from all five rookeries reached a maximum distance from the nearest coastline of 27.8 km, with the mean maximum distance away from the nearest coastline <6.1 km for each rookery.*

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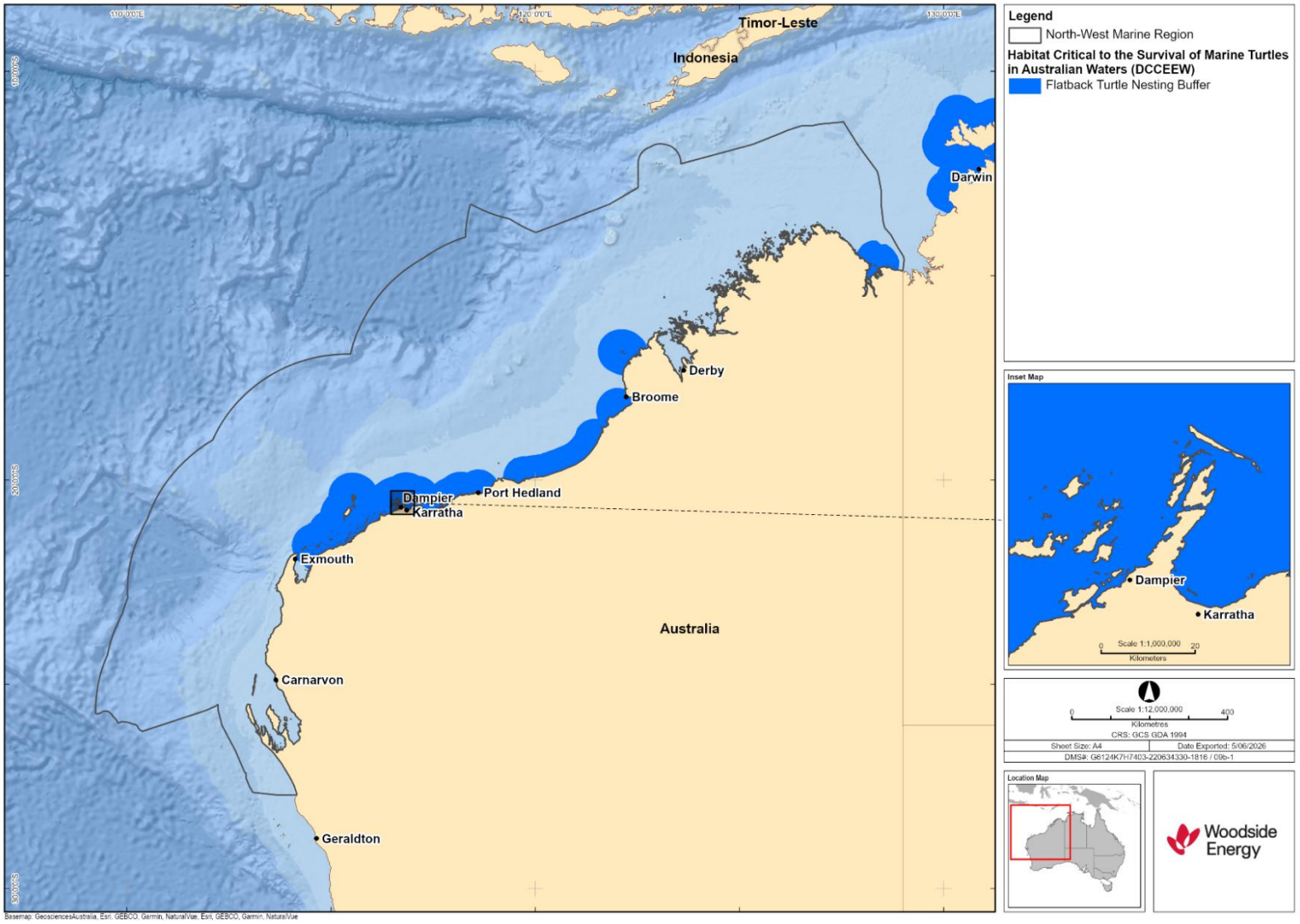


Figure 7-2: Flatback turtle habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

Source: DCCEEW (2025b)

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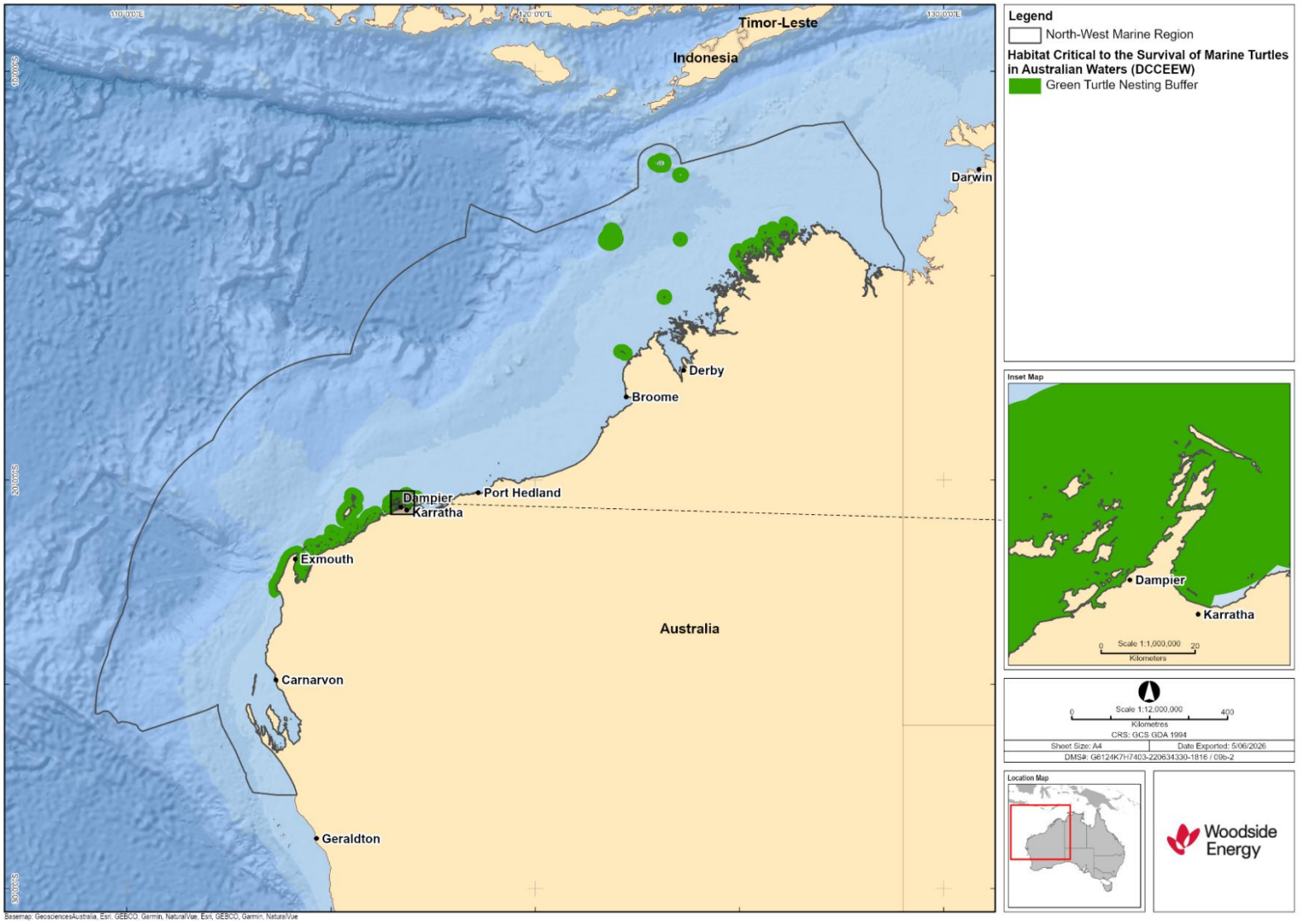


Figure 7-3: Green turtle habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

Source: DCCEEW (2025b)

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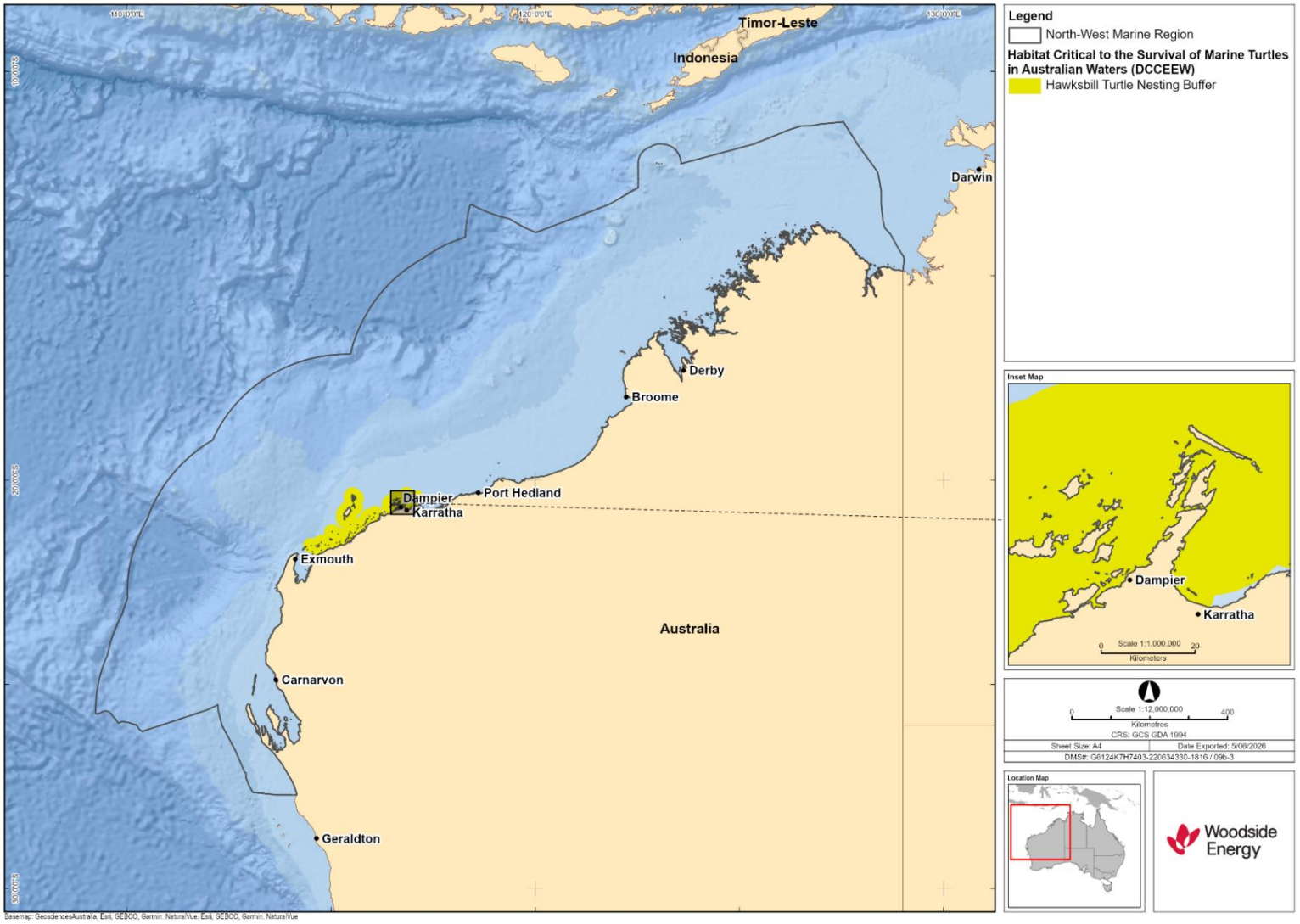


Figure 7-4: Hawksbill turtle habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

Source: DCCEEW (2025b)

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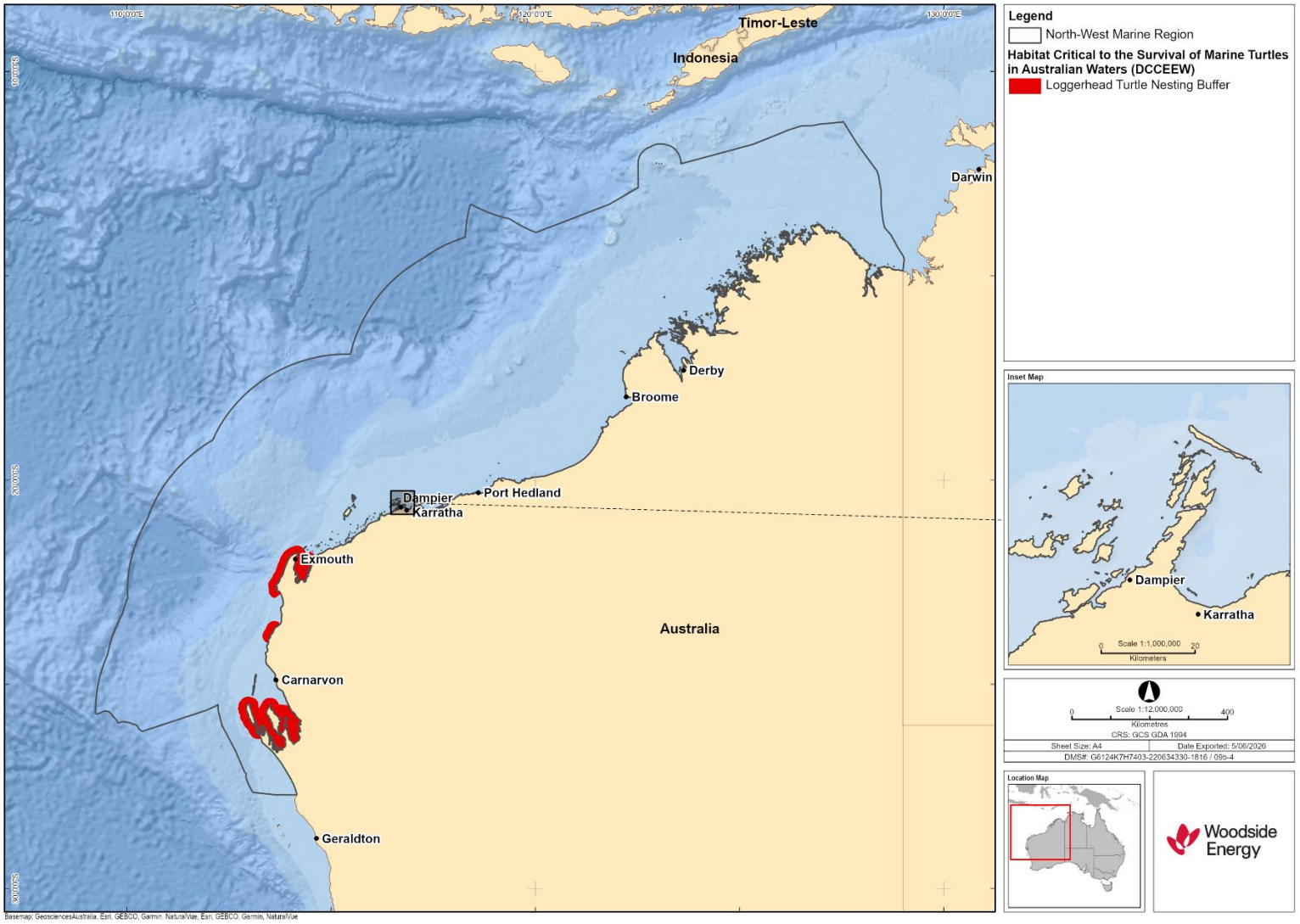


Figure 7-5: Loggerhead turtle habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

Source: DCCEEW (2025b)

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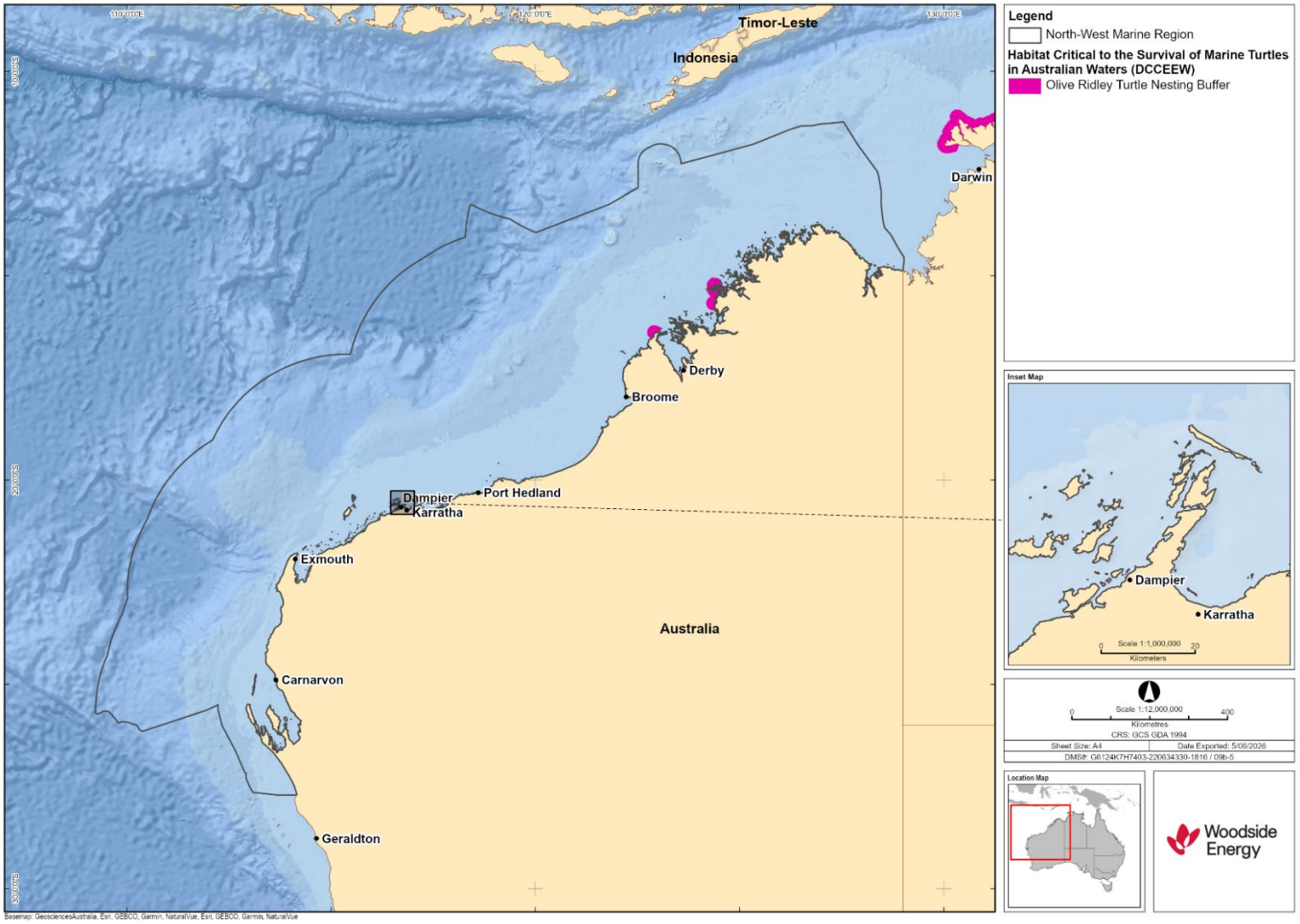


Figure 7-6: Olive ridley turtle habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

Source: DCCEEW (2025b)

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7.2.1.2 Marine turtle biologically important areas

A review of the Australian Marine Spatial Information System (Geoscience Australia 2026), the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012a) and the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia 2017) identified BIAs for five of the marine turtle species that occur within the NWMR. Table 7-4 describes these.

Table 7-4: Marine turtle BIAs within the NWMR

Species	Woodside activity area			BIAs				
	Browse	***NWS/ Scarborough***	***North West Cape***	***Mating***	***Nesting***	***Internesting***	***Foraging***	***Migration[9]***
Green turtle	✓	✓	✓	• Barrow Island • Montebello Islands (including Hermite Island, North West Island, Trimouille Island) • Dampier Archipelago (islands to the west of the Burrup Peninsula) • Ashmore Reef	• Barrow Island • Montebello Islands (including Hermite Island, North West Island, Trimouille Island) • Middle Island • Dampier Archipelago (islands west of the Burrup Peninsula) • North and South Muiron Islands • North West Cape • Delambre Island • Legendre Island and Huay Island • Lacepede Islands • Scott Reef – Sandy Island • Ashmore Reef • Cartier Island	Locations of 20 km internesting buffer BIAs for green turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012a). Year-round and seasonal 20 km internesting buffer BIAs are around nesting sites. Habitat critical to survival internesting buffer (Table 7-3) is the legally recognised area of protection under the EPBC Act.	• Inshore areas of Barrow Island • Montgomery Reef • Montebello Islands • Dixon Island • Ashmore Reef • Seringapatam Reef and Scott Reef • De Grey River area to Bedout Island • Around the islands between Cape Preston and Onslow and inshore of Barrow Island • Dampier Archipelago (islands west of the Burrup Peninsula) • Legendre Island and Huay Island • Delambre Island	Migration corridor at Dampier Archipelago (islands west of the Burrup Peninsula). Green turtles can migrate more than 2,600 km between their feeding and nesting grounds. Individual turtles foraging in the same area do not necessarily take the same migration route (Limpus *et al.* 1992). Ferreira *et al.* (2021) broadly identified two migratory corridors, one used by the NWS Pilbara Stock and another used by the NWS Kimberley Stock and the G-ScBr stock, with some overlap at the northern and southern extents respectively. This study showed the foraging

[9] Migration BIA included in Australian Marine Spatial Information System (Geoscience Australia 2026). General information for migratory behaviours also provided.

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Species	Woodside activity area			BIAs				
	Browse	*NWS/ Scarborough*	*North West Cape*	*Mating*	*Nesting*	*Internesting*	*Foraging*	*Migration*[9]
					• Cassini Island		• Joseph Bonaparte Gulf • In waters adjacent to James Price Point	distribution of green turtles from two stocks in WA expands throughout north-west and northern Australian coastal waters, including the NT and Queensland.
Hawksbill turtle	✓	✓	✓	• Montebello Islands Barrow Island • Lowendal Island Group • Dampier Archipelago (to the west of the Burrup Peninsula)	• Lowendal Island Group • Montebello Islands (including Ah Chong and South East islands) • Rosemary Island • Delambre Island • Barrow Island • Varanus Island and Thevenard Island • Dampier Archipelago (west of the Burrup Peninsula) • Ningaloo Coast and Jurabi Coast • Sandy Islet at Scott Reef	Locations of 20 km internesting buffer BIAs for hawksbill turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012a) and Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017). Year-round and seasonal 20 km internesting buffer BIAs are around nesting sites. Habitat critical to survival internesting buffer (Table 7-3) is the legally recognised area of protection under the EPBC Act.	Recent data shows foraging ranges from north of Exmouth Gulf to offshore Broome (Fossette *et al.* 2021a). Known foraging BIAs in the NWMR include: • Lowendal Island group • Delambre Island • around Dixon Island • in the De Grey River area to Bedout Island • around the islands between Cape Preston and Onslow and inshore of Barrow Island • around the islands of the Dampier Archipelago (west of the Burrup Peninsula)	Migration corridor at Dampier Archipelago (islands west of the Burrup Peninsula). Individuals may migrate up to 2,400 km between their nesting and foraging grounds (DSEWPaC 2012a), although reproductive migration distances over 1,000 km appear less common in hawksbill turtles than other species (Fossette *et al.* 2021a). Recent satellite tracking data show turtles migrating from WA rookeries remained on the continental shelf, with most following the coastline and dispersing in a north-easterly direction, with some turtles from the Montebello Archipelago and

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Species	Woodside activity area			BIAs				
	Browse	***NWS/ Scarborough***	***North West Cape***	***Mating***	***Nesting***	***Internesting***	***Foraging***	***Migration[9]***
							• Ashmore Reef	Lowendal Islands moving in a south-westerly direction and some stopping around Barrow Island. A migratory corridor was observed from Cape Preston to De Grey River (Fossette *et al.* 2021a).
Flatback turtle	✓	✓	-	• Lacepede Islands • Montebello Islands • Dampier Archipelago (islands to the West of the Burrup Peninsula) • Mating at Barrow Island	Flatback turtles nest exclusively in the northern regions of Australia, between latitudes of 22°S in the west and 25°S in the east. There are seven genetically distinct stocks, identified across 17 rookeries, with Delambre Island representing a key nesting site in the NWS genetic stock (Whiting *et al.* 2025). Known nesting BIA locations in the NWMR include: • Thevenard Island – South Coast (summer) high use on beaches with high dune height	Locations of 60 km internesting buffer BIAs for flatback turtles are described in the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017). Year-round and seasonal internesting buffer BIAs of 60 km are around nesting sites, extending 20 km further than the habitat critical to survival. Habitat critical to survival internesting buffer (60 km, Table 7-3) is the legally recognised area of protection under the EPBC Act. Flatback turtles preferentially use shallow continental	• Islands between Cape Preston and Onslow and inshore of Barrow Island. • Montebello Islands • Dampier Archipelago (islands west of the Burrup Peninsula) • Legendre Island and Huay Island • Delambre Island • Joseph Bonaparte Depression • In waters adjacent to James Price Point Bathymetry and distance from the coast are key environmental features that influence the suitability of flatback	Migration corridor at Dampier Archipelago (islands west of the Burrup Peninsula). The flatback turtle is a resident to Australian waters and spends 99% of its time within the Australian EEZ. A migratory corridor connects the coastlines between the Kimberley and Pilbara (Peel *et al.* 2024). There is evidence some flatback turtles migrate long distances between breeding and feeding grounds (Limpus *et al.* 1983). However, flatback turtles generally do not have a pelagic phase to their life cycle. Instead, hatchlings grow to maturity in

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Species	Woodside activity area			BIAs				
	Browse	*NWS/ Scarborough*	*North West Cape*	*Mating*	*Nesting*	*Internesting*	*Foraging*	*Migration*[9]
					• Barrow Island • Montebello Islands (including Hermite Island, North West Island, Trimouille Island) • Dampier Archipelago (islands west of the Burrup Peninsula) • Delambre Island • Legendre Island and Huay Island • Dixon Island • Intercourse Island • West of Cape Lambert • Various locations along the Pilbara coast between Karratha and Broome, including Cape Thouin, Mundabullangana, Cowrie Beach, Port Hedland (Cemetery Beach, Paradise Beach) and Eighty Mile Beach • Lacepede Islands	shelf waters near nesting beaches during the internesting period, with habitat suitability strongly influenced by bathymetry, proximity to the coastline and sea surface temperature. Tracking data from multiple rookeries show internesting individuals remain in relatively shallow waters near the shore in depths of generally <44 m, while typically averaging under 10 m. Internesting flatbacks rarely exceed 28 km from the coastline and usually remain within about 6 km. Habitat suitability modelling by *Whittock et al*. (2016) indicates internesting areas are spatially constrained, nearshore and associated with relatively warm shelf waters (about 27 to 30°C), rather than being widely dispersed offshore.	turtle foraging and behaviours in the NWMR (Hounslow *et al.* 2025). Suitable habitats for flatback foraging include soft-sediment habitats containing a plethora of invertebrates, sea pens and sea cucumbers, which are their typical diet. These habitats are usually in intertidal and nearshore areas about 5 to 10 km from the coast in areas characterised by shallow bathymetry (<15 m depth). The probability of suitable foraging habitats for flatbacks declines in depths >15 m and >10 km from the coastline (Hounslow *et al.* 2025).	shallow coastal waters thought to be near their natal beaches (DSEWPaC 2012a). A study predicting the dispersal of flatback turtle hatchlings found core areas were predominantly on the continental shelf (<200 m depth contour) during all dispersal phases, indicating flatback turtles remain in neritic areas (Wilson *et al.* 2023). Flatback turtles tagged at Roebuck Bay showed high residency, using the area year round as a foraging site, with movement patterns strongly influenced by tides rather than long-distance displacement (Hounslow *et al.* 2025). Flatback turtles are endemic to northern Australia and have a largely cryptic life history, from entering the ocean immediately after hatching until the turtles return to nest as adults. Therefore, there

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Species	Woodside activity area			BIAs				
	Browse	***NWS/ Scarborough***	***North West Cape***	***Mating***	***Nesting***	***Internesting***	***Foraging***	***Migration[9]***
								are knowledge gaps about juvenile demographics, growth, habitat use and migratory distribution (Whiting *et al.* 2025).
Loggerhead turtle	✓	✓	-	No mating BIA identified within the NWMR	• Dirk Hartog Island • Muiron Islands • Ningaloo and Jurabi coasts • Montebello Islands • Lowendal Island • Rosemary Island • Gnaraloo Station	Locations of 20 km internesting buffer BIAs for loggerhead turtles are described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012a) and the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia 2017). Year-round and seasonal 20 km internesting buffer BIAs are around nesting sites. Habitat critical to survival internesting buffer (Table 7-3) is the legally recognised area of protection under the EPBC Act.	• De Grey River area to Bedout Island • Western Joseph Bonaparte Depression • Waters adjacent to James Price Point	No migration BIA identified within the NWMR. Adult loggerhead turtles dispersing from Dirk Hartog Island beaches (near Shark Bay) have remained within WA waters from southern WA to the Kimberley. Turtles dispersing from the North West Cape – Muiron Islands nesting area have ranged north as far as the Java Sea and the north-western Gulf of Carpentaria, and to south-west WA (DSEWPaC 2012a).

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Species	Woodside activity area			BIAs				
	Browse	***NWS/ Scarborough***	***North West Cape***	***Mating***	***Nesting***	***Internesting***	***Foraging***	***Migration[9]***
Olive ridley turtle	-	-	-	No mating BIA identified within the NWMR	No nesting BIA identified within the NWMR	No internesting BIA identified within the NWMR	Western Joseph Bonaparte Depression and Gulf	No migration BIA identified within the NWMR. Migration routes and distances between nesting beaches and foraging areas are not known for Australian olive ridley turtles.

Source: Geoscience Australia (2026)

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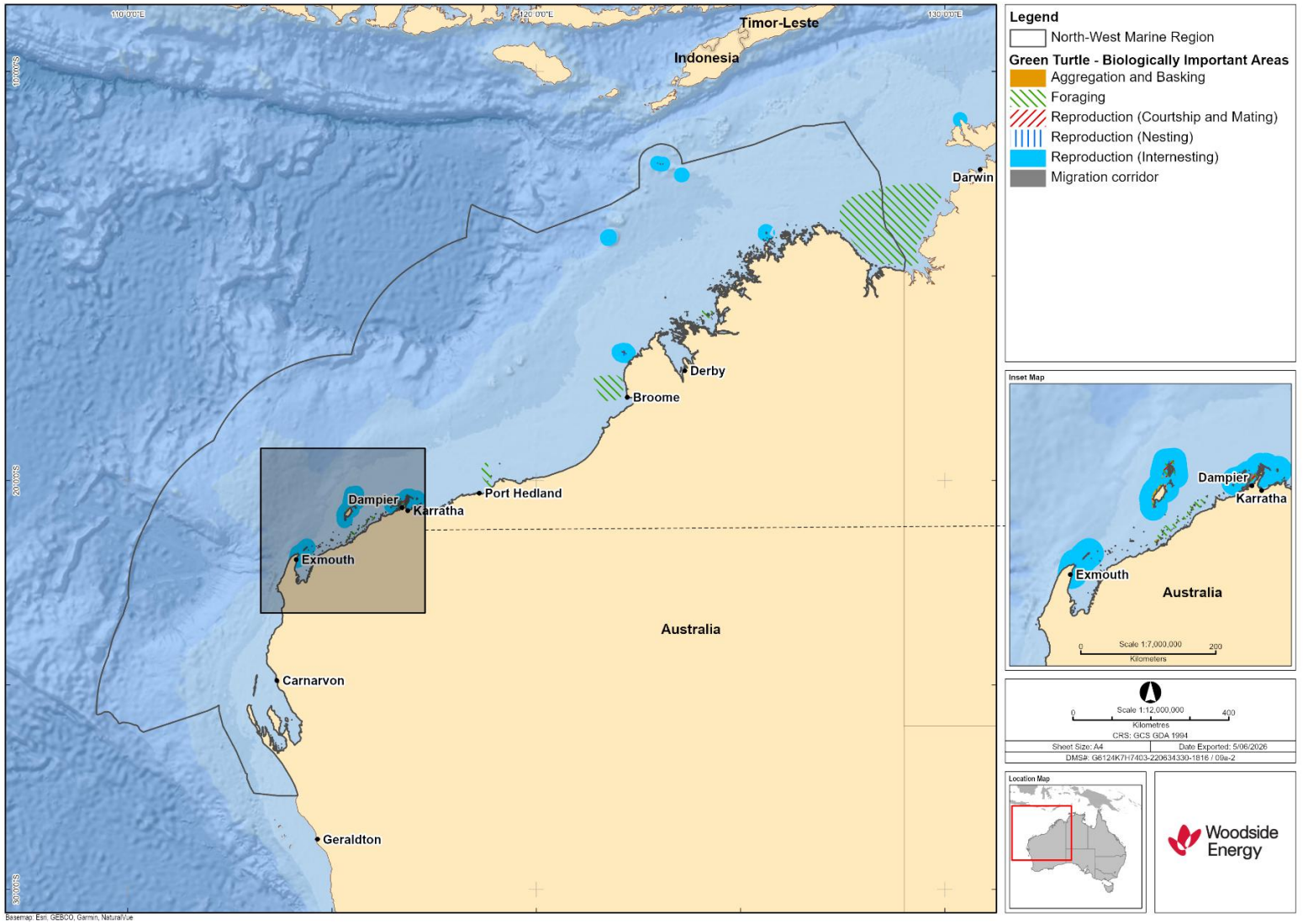


Figure 7-7: Green turtle BIAs within the NWMR

Source: DCCEEW (2025b)

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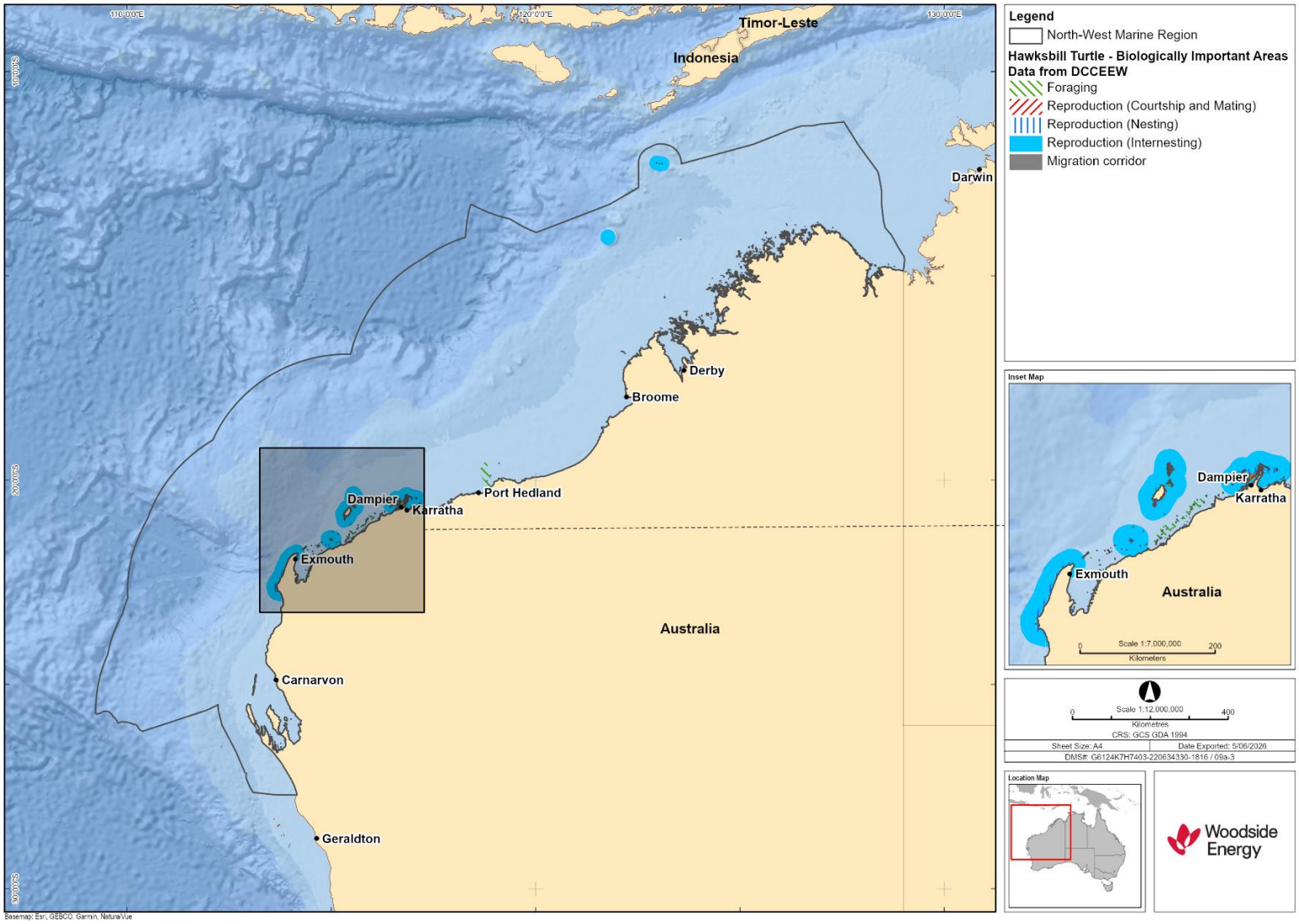


Figure 7-8: Hawksbill turtle BIAs within the NWMR

Source: DCCEEW (2025b)

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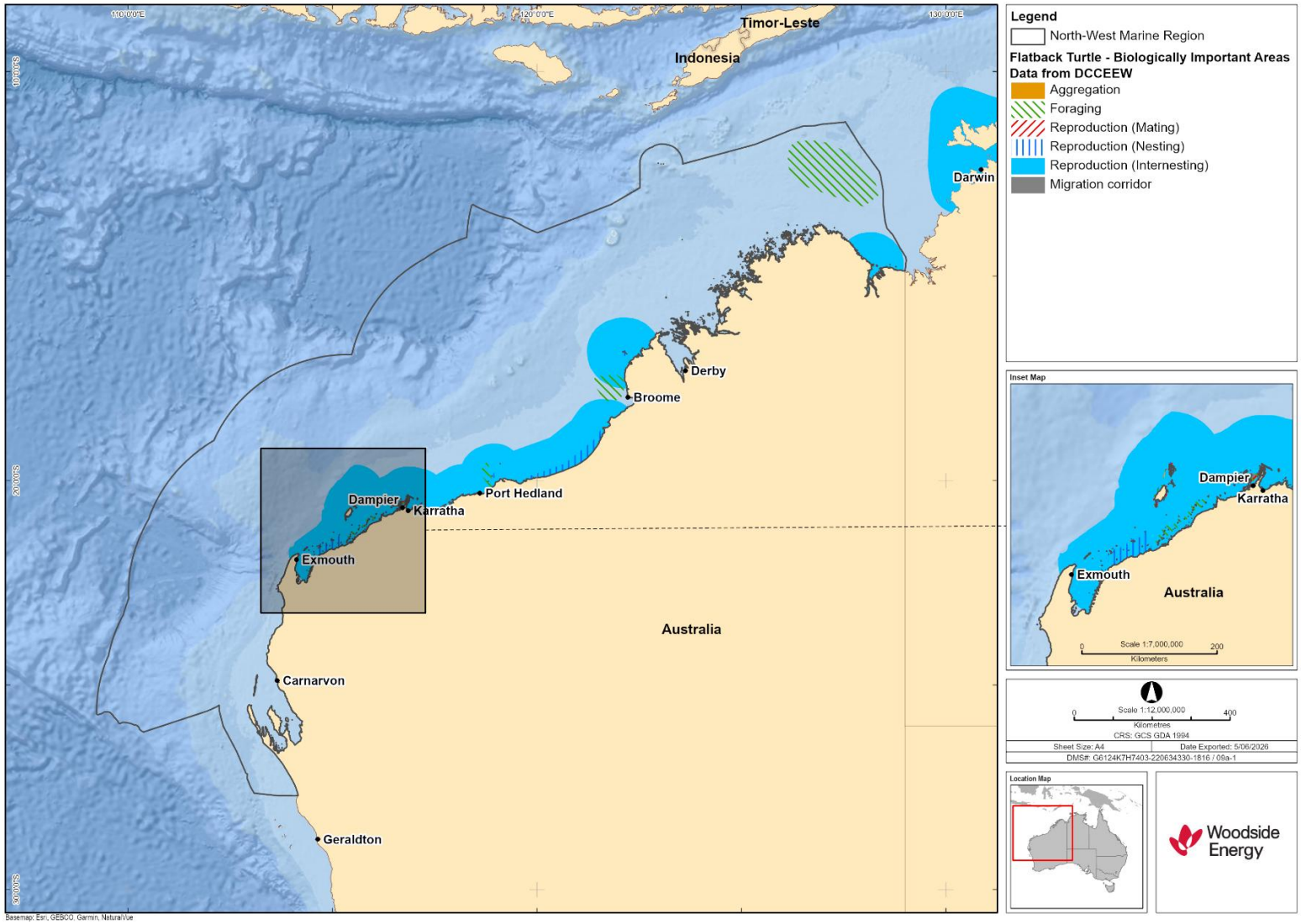


Figure 7-9: Flatback turtle BIAs within the NWMR

Source: DCCEEW (2025b)

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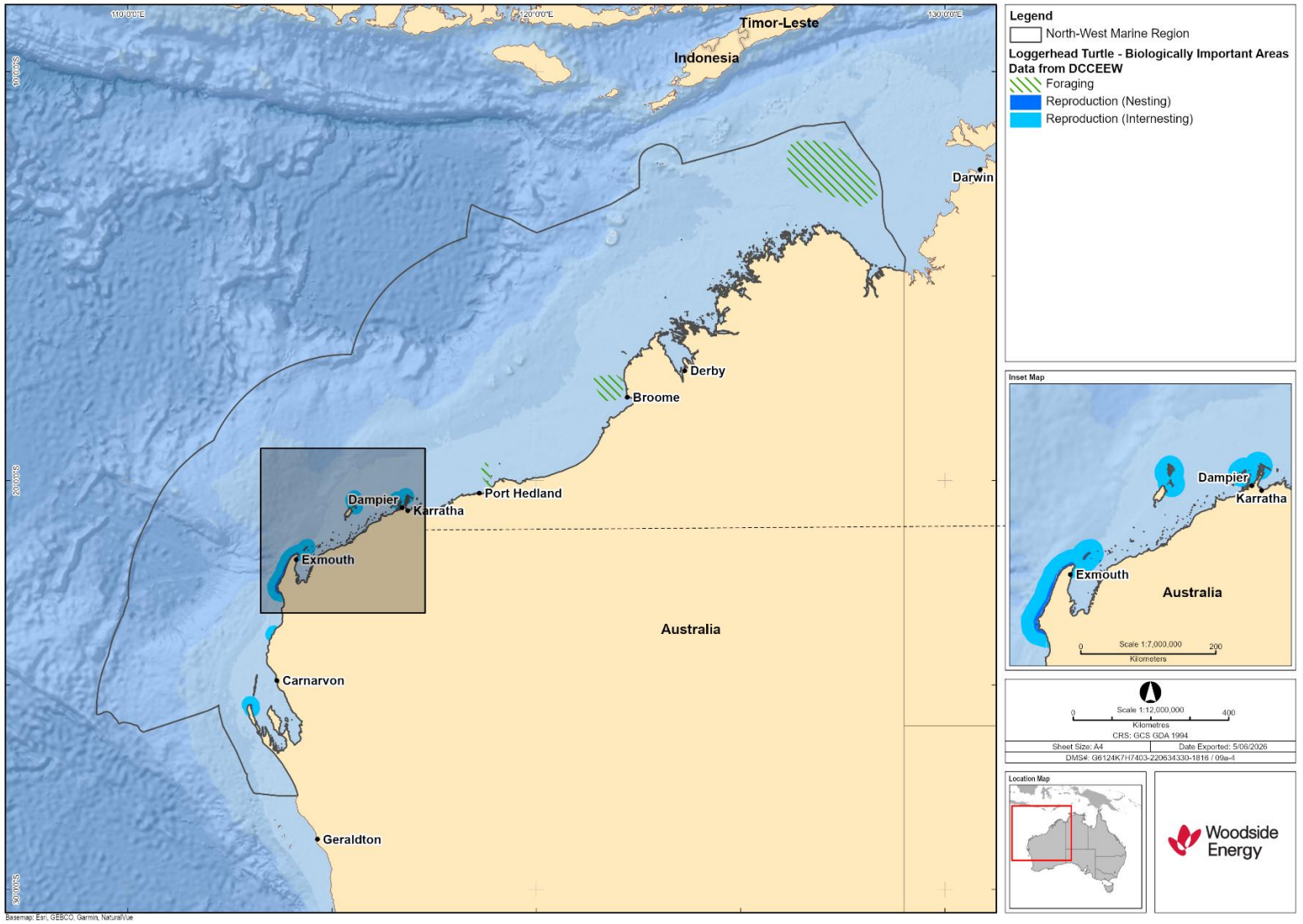


Figure 7-10: Loggerhead turtle BIAs within the NWMR

Source: DCCEEW (2025b)

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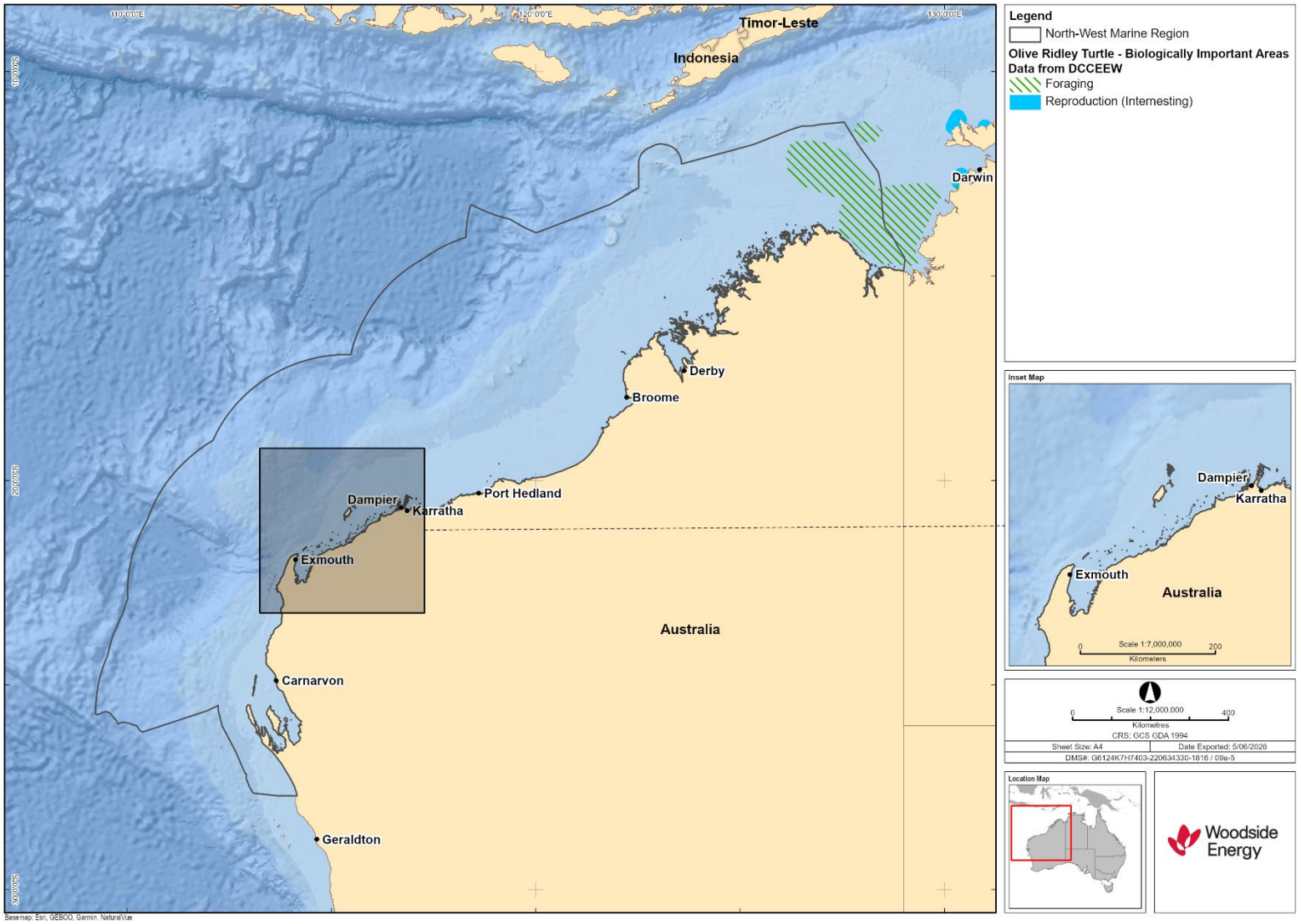


Figure 7-11: Olive ridley turtle BIAs within the NWMR

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7.2.2 Sea snakes

Sea snakes are widely distributed in the NWMR and NMR, but less common in the SWMR. They occupy three broad habitat types: shallow water coral reef and seagrass habitats, deepwater soft bottom habitats away from reefs, and surface water pelagic habitats (Guinea 2007a).

The PMST report identified a total of three EPBC Act listed threatened sea snakes (Table 7-1) and a further 23 EPBC Act listed marine sea snake species within the NWMR (Appendix A). Of these species, Guinea (2007a) and Udyawer *et al.* (2016) have described four of these species as being endemic to reef habitats in the remote parts of the NWMR. These species include the:

- dusky sea snake (*Aipysurus fuscus*)
- large headed sea snake (*Hydrophis pacificus*)
- short-nosed sea snake (*Aipysurus apraefrontalis*)
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake, the leaf-scaled sea snake and the dusky sea snake are listed threatened species (Critically Endangered or Endangered) under the EPBC Act (see Table 7-1). Table 7-5 presents further information about their preferred habitat, diet and habitat location.

The Kimberley coast has the world's highest diversity of sea snakes, supporting over one third of all known species (Somaweera and Saunders 2015). There is currently limited knowledge about the ranges and distribution patterns of sea snake species in the NWMR, in addition to a lack of understanding about population status and threats. Recent findings of *A. apraefrontalis* and *A. foliosquama* in locations outside of their previously defined ranges have highlighted the lack of information about species distributions in the NWMR (Udyawer *et al.* 2016). Udyawer *et al.* (2020) used a correlative modelling approach to understand habitat associations and identify suitable habitats for five sea snake species (*A. apraefrontalis*, *A. foliosquama*, *A. fuscus*, *A. l. pooleorum* and *A. tenuis*). Species-specific habitat suitability was modelled across 804,244 km² of coastal waters along the NWS, and the resulting habitat suitability maps enabled the identification of key locations of suitable habitat for these five species (see Table 7-5).

No habitat critical to survival or BIAs for sea snake species have been identified in the NWMR. While the Ashmore Reef and Cartier Island AMPs have been recognised for their high diversity and density of sea snakes (DSEWPaC 2012a), surveys have revealed a steep decline in sea snake numbers at Ashmore Reef (Guinea 2007b; Lukoschek *et al.* 2013). Leaf-scaled and short-nosed sea snakes have been absent from surveys at Ashmore Reef since 2001, despite an increase in survey intensity (Guinea, 2006, 2007b; Guinea and Whiting 2005; Lukoschek *et al.* 2013). The reason for the decline is unknown.

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Table 7-5: Information about threatened sea snake species within the NWMR

Species	Preferred habitat and diet	Habitat location
Short-nosed sea snake	Preferred habitat: Primarily on reef flats or in shallow waters of outer reef edges to depths of 10 m (Minton *et al.* 1975). Typically, movement is restricted to within 50 m of reef flat habitat (Guinea and Whiting 2005). Diet: Primarily fishes and eels.	The short-nosed sea snake has been recorded from Exmouth Gulf to the reefs of the Sahul Shelf, although most records come from Ashmore and Hibernia reefs (Guinea and Whiting 2005). Key locations of suitable habitat: Ashmore Reef, Exmouth Gulf and coral habitat fringing the Muiron Islands and the Montebello Islands (Udyawer *et al.* 2020).
Leaf-scaled sea snake	Preferred habitat: The leaf-scaled sea snake occurs in shallow protected areas of reef flats, typically in water depth less than 10 m. Diet: Primarily shallow water coral-associated wrasse, gudgeons, clinids and eels (McCosker 1975; Voris 1972; Voris and Voris 1983).	The leaf-scaled sea snake has only been recorded at Ashmore and Hibernia reefs (Guinea and Whiting 2005), indicating it has a very limited distribution. Key locations of suitable habitat: Ashmore Reef, Shark Bay, Exmouth Gulf, Barrow Island and Montebello Islands (Udyawer *et al.* 2020).
Dusky sea snake	Preferred habitat: The dusky sea snake is a reef specialist that is only known to occur on complex hard coral reefs and shoals, both emergent and subsurface. It has only been recorded at depths of 0 to 20 m but may occur in deeper areas with less survey effort (DCCEEW 2024m). Diet: Stomach content analyses have identified benthic gobies, wrasses and occasionally fish eggs (DCCEEW 2024m).	The dusky sea snake has been recorded sparsely and patchily from reefs and shoals at the outer margin and mid-shelf of the Australian continental shelf, specifically at the Scott Reef complex (Scott Reef, North Scott Reef and Sandy Islet) and nearby Seringapatam Reef, Heywood Shoal, and at Ashmore Reef, Cartier Island and Hibernia Reef. The dusky sea snake has not been detected at Ashmore Reef, Cartier Island or Hibernia Reef since the early 2000s. The species may occur undetected at mid-shelf shoals, which comprise the shallowest of sea mounts and banks that occur along a north-easterly crescent from south of Heywood Shoal, past Cartier Island, to Ashmore Reef (DCCEEW 2024m).

7.2.3 Crocodiles

The PMST report identified the salt-water crocodile (*Crocodylus porosus*) is listed as a migratory species under the EPBC Act within the NWMR (Table 7-1). This species is usually found in Australian coastal waters, including estuaries, lakes, inland swamps and marshes, and have been recorded persisting in freshwater bodies hundreds of kilometres inland. In the NWMR, the species is found in most major river systems of the Kimberley, including the Ord, Patrick, Forrest, Durack, King, Pentecost, Prince Regent, Lawley, Mitchell, Hunter, Roe and Glenelg rivers. The largest populations occur in the rivers draining into the Cambridge Gulf and the Prince Regent River and Roe River systems. There have also been isolated records in rivers of the Pilbara region, around Derby near Broome and as far south as Carnarvon on the mid-west coast (DoE 2026b).

The preferred nesting habitat of the salt-water crocodile includes elevated and isolated freshwater swamps with no tidal movements, with vegetation and floating rafts of vegetation for nesting. Nesting usually occurs between November and May, with a peak between January and February (DoE 2026b). No BIAs for salt-water crocodile have been identified in the NWMR.

7.2.4 Water monitors

The PMST report identified a total of two EPBC Act listed threatened water monitors within the NWMR (Table 7-1) that inhabit coastal areas. Table 7-6 describes these.

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Table 7-6: Water monitors identified within the NWMR

Species	Key information
Mertens' water monitor	Mertens' water monitor (*Varanus mertensi*) is listed as endangered under the EPBC Act. This species occurs sparsely across the tropical areas of the Kimberley extending to the NT, inhabiting coastal areas and near coastal islands. Extensive surveys in the Kimberley found the Mertens' water monitor on 11 of the islands off the coast of the Kimberley and NT. These islands represent <1% of the modelled distribution of this species (DCCEEW 2023i). This species is highly aquatic and seldom ventures more than 5 to 10 m from the water's edge, except when travelling between core aquatic sites. It inhabits swamps, creeks, floodplains, lagoons, swamps and perennial and semi-perennial pools, and is known to bask on structures in and surrounding water bodies (DCCEEW 2023i). Habitat critical to the survival of the species has not been mapped but includes all areas where the species persists after cane toads have established and areas within known distribution where habitat occurs or can be restored (terrestrial) (DCCEEW 2023i). No BIAs for Mertens' water monitor have been identified in the NWMR.
Mitchell's water monitor	Mitchell's water monitor (*Varanus mitchelli*) is listed as critically endangered under the EPBC Act. The species is known to occur in wetlands and coastal floodplains in the northern extent of the NWMR, with distribution from Yampi Sound Training Area, across the Kimberley and into the Top End of the NT and far northwest Queensland (DCCEEW 2023c). The species inhabits freshwater and saline wetlands that range from seasonal gorges in upper catchments to large rivers and coastal floodplains. It has been recorded in rivers, creeks, riffle zones, gorges, springs, lagoons, swamps, mangroves and foreshores (DCCEEW 2023c). Habitat critical to the survival of the species has not been mapped but includes all areas where the species persists after cane toads have established and areas within known distribution where habitat occurs or can be restored (terrestrial) (DCCEEW 2023c). No BIAs for Mitchell's water monitor have been identified in the NWMR.

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8. MARINE MAMMALS

8.1 Regional context

The offshore waters of WA provide important habitat for marine mammals, including areas that support key life stages such as breeding, calving, foraging and migration. As described in the Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012a), of the 45 species of cetacean occurring in Australian waters, 21 occur regularly in the waters of the NWMR and a further 12 may occur infrequently. In the waters of the NMR, nine of the 45 cetacean species occur regularly and a further 15 may occur infrequently (DSEWPaC 2012c). In the SWMR, 33 species of cetaceans occur frequently, with a further ten that may occur infrequently in the region (DSEWPaC 2012b).

The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters of the NWMR for several cetacean species (DSEWPaC 2012a). Numerous large mysticetes (baleen whale) species, particularly the humpback whale, are known to use the region for migration and calving, and the pygmy blue whale is known to use the region for foraging and as a migration pathway between southern feeding and northern breeding and feeding areas north of the equator. The waters of the NWMR and the NMR also support globally significant dugong populations (DSEWPaC 2012a; 2012c).

The SWMR is an important area for numerous marine mammal species, including pinniped species, large, migratory whale species and resident coastal whale and dolphin species (DSEWPaC 2012b).

The NMR and adjacent areas are important for several species of cetaceans, particularly inshore dolphin species. These species, and other marine mammals, rely on the waters of the NMR and adjacent coastal areas for breeding and foraging (DSEWPaC 2012c).

The PMST report (Appendix A) identified a total of 15 EPBC Act listed threatened or migratory marine mammal species, including cetaceans, one dugong and one pinniped, within the NWMR (Table 8-1). An additional 22 EPBC Act listed cetacean species that do not have a threatened or migratory status were recorded within the NWMR. Appendix A provides a full list.

The PMST report identified a total of 12 EPBC Act listed threatened or migratory marine mammal species, including cetaceans and one dugong, within the NMR. An additional 15 EPBC Act listed cetacean species that do not have a threatened or migratory status were recorded within the NMR. Appendix A provides a full list.

The PMST report identified a total of 12 EPBC Act listed threatened or migratory cetaceans and one pinniped species within the SWMR. An additional 29 EPBC Act listed cetacean species, and one pinniped species, that do not have a threatened or migratory status were recorded within the SWMR. Appendix A provides a full list.

8.2 Marine mammals in the NWMR

Table 8-1 outlines the threatened and migratory marine mammal species identified by the PMST that may, are likely or are known to occur within the NWMR, with their conservation status and relevant recovery plans and conservation advice.

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Table 8-1: Threatened and migratory marine mammal species identified by the EPBC Act PMST that may, likely or are known to occur within the NWMR

Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[10]	IUCN Red List (non-statutory)[11]	EPBC Act Part 13 statutory instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	
Cetaceans – Mysticeti							
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Endangered	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee 2015a)
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Vulnerable	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee 2015c)
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Cetacean	Migratory	Least Concern	N/A
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Cetacean	Migratory	Near Threatened	N/A
Balaenoptera musculus	Blue whale	Endangered	Migratory	Cetacean	Endangered	Endangered	Conservation Management Plan for the Blue Whale – A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015–2025 (Commonwealth of Australia 2015a)
Balaenoptera omurai	Omura's whale	N/A	Migratory	Cetacean	N/A	Data Deficient	N/A

[10] Threatened and Priority Fauna List – July 2025 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 21/05/2026).
[11] IUCN, 2026. The IUCN Red List of Threatened Species. Version 2025-2. https://www.iucnredlist.org (accessed on 21/05/2026).

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[10]	IUCN Red List (non-statutory)[11]	EPBC Act Part 13 statutory instrument
		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Eubalaena australis	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Least Concern	National Recovery Plan for the Southern Right Whale *Eubalaena australis* (DCCEEW 2024a)
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Cetacean	Conservation dependent	Least Concern	Listing Advice *Megaptera novaeangliae* Humpback whale (*DAWE 2022*)
Cetaceans – Odontoceti							
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	Vulnerable	N/A
Orcinus orca	Killer whale (orca)	N/A	Migratory	Cetacean	Migratory	Data Deficient	N/A
Orcaella heinsohni	Australian snubfin dolphin	Vulnerable	Migratory	Cetacean	Priority	Vulnerable	Conservation Advice for *Orcaella heinsohni* (Australian snubfin dolphin) (DCCEEW 2025d)
Sousa chinensis	Indo-Pacific humpback dolphin (Australian humpback dolphin)	Vulnerable	Migratory	Cetacean	Priority	Vulnerable	Conservation Advice for *Sousa sahulensis* (Australian humpback dolphin) (DCCEEW 2025e)
Tursiops aduncus	Indo-Pacific/ Indian Ocean spotted bottlenose dolphin (Arafura/ Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A	N/A
Sirenians and pinnipeds							
Dugong dugon	Dugong	N/A	Migratory	Marine	Migratory	Vulnerable	N/A

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[10]	IUCN Red List (non-statutory)[11]	EPBC Act Part 13 statutory instrument
		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Neophoca cinerea	Australian sea lion	Endangered	N/A	Marine	Endangered	Endangered	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPaC 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee 2020) (in effect under the EPBC Act from 23 December 2020)

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8.2.1 Cetaceans

Cetaceans are generally widely distributed and highly mobile. In general, distribution patterns reflect seasonal feeding and breeding areas, characterised by high productivity, and migration routes associated with reproductive patterns. The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species (DSEWPaC 2012a).

The PMST report identified 35 EPBC Act listed cetacean species as potentially occurring or having habitat within the NWMR (Appendix A). Of those, 13 cetacean species are listed as threatened or migratory (Table 8-1), including baleen whales, toothed whales and dolphins that occur within the NWMR.

Table 8-2: Information about the threatened/migratory cetacean species within the NWMR

Species	Key information
Baleen whales (Mysticeti) – low frequency hearing	
Humpback whale	In Australian waters, two genetically distinct populations of humpback whales migrate annually along the west (Group IV/D) and east (Group V) coasts between May and November (Jenner *et al.* 2001), The population of humpback whales (*Megaptera novaeangliae*) known as Group IV/D migrate annually from Antarctic feeding grounds, passing along the coast of WA to warm tropical waters, including the Kimberley, North West Cape and Exmouth Gulf, for breeding and calving (Russell *et al.* 2024). The biannual migration of humpback whales through the NWMR occurs in winter (June to August) for northbound migrating whales and southbound in early spring (September to November). Population data for the WA subpopulation is considerably variable (DAWE 2022). The population has been increasing in size at a rate of about 10% per annum since whaling ceased in WA waters by 1963 (Thums *et al.* 2018) and population numbers have increased from about 2,000 to 3,000 individuals in 1991 to between 19,200 and 33,850 individuals in 2008 (Bannister and Hedley 2001; Bejder *et al.* 2019; Hedley *et al.* 2011). Aerial surveys off the WA coast between 2000 and 2008 produced a population estimate for Group IV of 26,100 individuals (Salgado Kent *et al.* 2012) and the predicted increasing trend in abundance predicted by modelling (Thums *et al.* 2018). The International Whaling Commission (IWC) estimated that in 2012 the WA subpopulation had recovered to 90% (74 to 98% probability interval) of its pre-whaling levels and projected that by 2020 it would have reached 98% (88 to 100% probability interval) (IWC 2015, cited in DAWE 2022). Due to the unprecedented population recovery, the humpback whale was removed from the EPBC Act threatened species list as it was deemed no longer eligible for inclusion (*DAWE 20*22) after a previous listing as vulnerable for many decades. The Group IV population migrates northward from their Antarctic feeding grounds around May each year, reaching the NWMR around early June. The southward migration subsequently starts in mid-September, after time for breeding and calving (typically within August and September) (Threatened Species Scientific Committee 2015b). Within the NWMR are key calving areas between Broome and the northern end of Camden Sound, and resting areas in the southern Kimberley region, Exmouth Gulf and Shark Bay. High numbers of humpback whales are observed in Camden Sound and Pender Bay from June to September each year (Threatened Species Scientific Committee 2015b) and as far south as Gourdon Bay in the Kimberley (Thums *et al*. 2018). There are reports of neonates present further south, suggesting the calving areas may be poorly defined, expanding or returning to pre-whaling patterns as the population recovers. Aerial photogrammetric surveys in 2013 and 2015 recorded large numbers of humpback whale calves along the North West Cape, with estimated minimum relative calf abundance of 463 to 603 in 2013 and 557 to 725 in 2015 (Irvine *et al.* 2018). Most calves sighted in both years (85% in 2013; 94% in 2015) were neonates, and these observations indicate a minimum of about 20% of the expected number of calves of this population are born near or south of North West Cape. Thus, the calving grounds for the Group IV population extend south from Camden Sound to at least North West Cape, 1,000 km south-west of the currently recognised calving area (Irvine *et al.* 2017) and further south, as reported for Geographe Bay and Flinders Bay (in July and August) in south-west WA (Jolliffe *et al.* 2024). Table 10-1 presents the seasonal presence of humpback whales. Migration, breeding and calving BIAs for the humpback whale within the NWMR are presented in Table 8-3 and Figure 8-2.
Blue whale	There are two recognised subspecies of blue whale in the southern hemisphere, both of which are recorded in Australian waters. These are the southern (or 'true') blue whale (*Balaenoptera musculus*) and the 'pygmy' blue whale (*Balaenoptera musculus brevicauda*) (Commonwealth of Australia 2015a). In general, southern blue whales occur in waters south of 60°S and pygmy blue whales occur in waters north of 55°S (as in, not in Antarctic waters). On this basis, it is reasonably assumed all blue whales sighted in the NWMR are likely to be pygmy blue whales.

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Species	Key information
	The migratory population, known as the East Indian Ocean pygmy blue whale population, migrates biannually through the NWMR. This population is seasonally distributed from Indonesia (a potential breeding ground) to south-west of Australia and east across the Great Australian Bight and Bonney Upwelling to beyond the Bass Strait (Blue Planet Marine 2020; McCauley *et al.* 2018). Migration seems to be variable, with some individuals appearing as resident to areas of high productivity and others migrating across long distances (Commonwealth of Australia 2015a). McCauley *et al.* (2018) describe three migratory stages around Australia for the East Indian Ocean pygmy blue whale population, based on collated passive acoustic data: a 'southbound migratory stage' where whales travel southwards from Indonesian waters offshore from the WA coastline, mostly from October to December but possibly into January of the next year; a protracted 'southern Australian stage' (January to June) where animals spread across southern waters of the Indian Ocean and south of Australia (with movement as far south as the Southern Subtropical Convergence Zone); and a 'northbound migratory stage' (April to August) where animals travel north back to Indonesia again. Extensive passive acoustic monitoring throughout the NWMR indicates migratory timing and distribution of pygmy blue whales (noting this survey method detects vocalising whales): • Acoustic monitoring by McCauley and Jenner (2010) in the Exmouth and northern Montebello Islands region identified a peak period in the northern migration of pygmy blue whales from April to August, and from November through to late December during the southern migration. • McCauley (2011b) recorded northbound migration between mid-April and early August and southbound migration between October and December and possibly into January for the Scott Reef area from 2006 to 2009, noting the absence of any southbound detection in 2007. • Noise loggers deployed in 2019 for a full year detected pygmy blue whales on their northern and southern migration. The noise loggers were at various locations about 40 to 50 km west of the activity area, and in about 1,300 m water depth. Many pygmy blue whales detected on their northern migration occurred from mid-April to the end of July, then again on their southern migration in November through to early December (Chevron Australia 2019). • Gavrilov *et al.* (2018) analysed acoustic data from an array of ocean bottom seismographs (recorded in December 2014) to detect pygmy blue whales, and showed the southbound migration was over an extended offshore corridor traversing an area up to 400 km northwest of North West Cape. • A targeted passive acoustic monitoring program to detect southbound migratory pygmy blue whales ran from late October 2021 to March 2022 with a deepwater acoustic long-term observatory lander (900 m depth) west of the Montebello Trough and C-lander (190 m depth) at the outer edge of the NWS (Warren *et al.* 2023). Despite vessel noise dominating low frequencies throughout the recording periods at both locations, pygmy blue whale song vocalisations and D-calls were detected from the start of the recording period through November and early December 2021. • An offshore trial of distributed acoustic sensing using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising pygmy blue whales within 12 km detection range within a 50 km long area on the outer edge of NWS (Debens *et al.* 2024). Pygmy blue whale detections were made from mid-November (start of the trial) through to mid-December 2023 and a couple of detections in early January 2024. The first satellite tracks of pygmy blue whales for this population documented northbound migration between WA and Indonesia (Double *et al.* 2014) and identified areas where whales had highest occupancy, such as Perth Canyon, Naturalist Plateau, North West Cape region and the Banda Sea. Pygmy blue whales tagged in the Bonney Upwelling region of SA in 2015 showed most of the tagged whales remained in SA waters during the tracking period, but one documented the migration to Indonesia via WA waters and a return journey (albeit via intermittent data) of the southbound migration to the southern coast of WA (Möller *et al.* 2020). Thums *et al*. (2022) used passive acoustic monitoring and satellite telemetry data (a combination of existing data and tag tracking data collected for WA between 2019 and 2022) to assess the spatial extent of the distribution, migration and foraging areas for pygmy blue whales in the south-east Indian Ocean associated with the northbound migration. The tag tracking results highlighted extensive use of slope habitat off WA and minimal use of shelf habitat by pygmy blue whales. Additionally, pygmy blue whales off WA were mostly engaged in migration, with short periods of foraging. Whale density was highest in the southern part of the north-west Australian coast and whales were there between April and June and November and December. This study also compared foraging and migration areas to described areas of importance (BIAs); some aligned such as migratory BIA for northbound pygmy blue whales while some had less than 10% overlap (Thums *et al.* 2022). The timing, distribution and behaviour of southbound pygmy blue whales is less well documented with reference to satellite tagging. Limited tagged whale data from Double *et al.* (2014), Möller *et al.* (2020) and Thums *et al.* (2022) indicated connectivity of migrating pygmy blue whales

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Species	Key information
	from SA through WA to and back from Indonesia. Mustika *et al.* (2024) satellite tag tracking data for two southbound pygmy blue whales (tagged in Indonesia) suggest varying migratory pathways from the Savu Sea to subantarctic waters, as well as extended time in the Southern Subtropical Convergence Zone. One tagged whale traversed a migratory path through offshore waters of WA towards Heard and McDonalds islands, covering almost 6,000 km and travelling at 100 km per day. In contrast, a second tagged whale took a migratory journey similar to the documented northbound route to the North West Cape before heading out into offshore waters and spending time in the Subantarctic Front before looping back up through the Perth Canyon, North West Cape and towards Savu Sea (Mustika *et al.* 2024). More recent tagging data from Thums *et al.* (2025) observed one whale travelling southwards rather than northwards to forage off the shelf edge in Bremer Bay in an area where another pygmy blue whales were observed to be foraging. This highlights that not all pygmy blue whales migrate northward each year. More recent combined satellite tracking and dive behaviour data provide evidence about the timing and location of pygmy blue whales foraging along their migration pathway (Thums *et al.* 2025). This study showed pygmy blue whales forage intermittently during migration, with foraging and lunge feeding occurring every one to ten days (Thums *et al.* 2025). Foraging behaviour was confirmed in several areas along WA, including Perth Canyon to offshore Jurien Bay, the shelf edge near Geraldton and the Abrolhos region, offshore Ningaloo to the Montebello Islands, and in smaller areas near Shark Bay, offshore Bremer Bay and in the Savu Sea (Indonesian waters). Opportunistic foraging also occurred in offshore waters between these areas during long-distance migration (Thums *et al.* 2025). In southern WA, foraging and lunge feeding dives were typically in deeper waters (>300 m), associated with slower horizontal movement and predominantly foraged during daylight hours. In contrast, whales foraging off Ningaloo, the Kimberley and in Indonesian waters exhibited shallower dives (about 100 m), faster travel rates, and weaker or absent diel patterns, consistent with more opportunistic feeding (Thums *et al.* 2025). There is currently insufficient data to accurately estimate population numbers of the pygmy blue whale in Australian waters (Blue Planet Marine 2020; Commonwealth of Australia 2015a). There are, however, two estimates of population size of the East Indian Ocean pygmy blue whale for WA. McCauley and Jenner (2010) calculated the population to be between 662 and 1,559 individuals in 2004 based on passive acoustics (whale vocalisations), and Jenner *et al.* (2008) (based on photographic mark and recapture) calculated between 712 and 1,754 individuals. Neither estimates accounted for animals travelling further west into the Indian Ocean (McCauley *et al.* 2018). More recent passive acoustic data estimate a 4.3% growth rate that applies to the proportion of East Indian Ocean pygmy blue whales seasonally present in offshore water off south-eastern Australia and may not reflect the full population but does imply an increase (McCauley *et al.* 2018). Thums *et al.* (2022) identified the most important foraging (and resting or breeding) areas from south to north as: (1) the Perth Canyon and vicinity; (2) the shelf edge off Geraldton; (3) the shelf edge from Ningaloo Reef to the Rowley Shoals (not continuous) and including a couple of small areas near the shelf edge off about 25ºS; and (4) the Banda Sea. The foraging BIA off the south-west of WA encompassed 83% of the most important areas in that region (Thums *et al.* 2022). Thums *et al.* (2025) validated these areas using direct dive data and further showed that additional, smaller and more opportunistic foraging areas can occur outside designated BIAs, particularly during migration. The pygmy blue whale is typically in the Perth Canyon from November to June, with an observed peak between March and May (Commonwealth of Australia 2015a; Blue Planet Marine 2020). The pygmy blue whale feeds in the Perth Canyon at depths of 200 to 300 m, which overlaps the typical distribution of krill (200 to 500 m water depth (day) to surface (night)) (McCauley *et al.* 2004; Commonwealth of Australia 2015a). Other possible feeding grounds off the WA coast include the wider area around the Perth Canyon, and possible foraging areas off the Ningaloo Coast and at Scott Reef (Commonwealth of Australia 2015a). Table 10-1 presents the seasonal presence of pygmy blue whales. Table 8-3 and Figure 8-4 present the location and type of BIAs for blue whales in the NWMR. There is a migratory BIA for the pygmy blue whale within WA waters, which extends for most of the length of the NWMR within offshore waters.

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Species	Key information
Bryde's whale	The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to about 40°N and S, or the 20° isotherm (Bannister *et al.* 1996). The species is known to exhibit inshore and offshore forms, varying in morphology and migratory behaviours in other international locations (Bannister *et al.* 1996). This appears to also be the case within Australian waters. Bryde's whales have been identified as occurring in oceanic and inshore waters, with the only key localities recognised in WA being in the Houtman Abrolhos Islands and north of Shark Bay (Bannister *et al.* 1996). Data suggest offshore whales migrate seasonally, heading towards warmer tropical waters during the winter, but information about migration within the NWMR is not well known (McCauley and Duncan 2011). McCauley (2011b) detected Bryde's whales using acoustic loggers deployed in and around Scott Reef from 2006 to 2009. Other acoustic logger data of Bryde's whale vocalisations recorded between Ningaloo and north of Darwin showed no apparent trends or seasonality (McCauley 2011a). There are no identified BIAs for this species in the NWMR.
Southern right whale	The southern right whale occurs primarily in waters between about 20°S and 60°S and moves from high-latitude feeding grounds in summer to warmer, low-latitude coastal locations in winter (Bannister *et al.* 1996). Two populations of southern right whale occur in Australian waters: the western and eastern (DCCEEW 2024a). Southern right whales in Australian waters predominantly occur in aggregations in coastal water reproductive areas where they calve and nurse their young from May to October, primarily occupying shallow waters (<10 m depth) within 1 km of the coastline (Charlton *et al.* 2019; Smith *et al.* 2022a, cited in DCCEEW 2024a). Peak period of abundance is late July to August, with seasonal variability. Females accompanied by a calf generally occupy the calving ground for two to three months between June and September (DCCEEW 2024a). Recent long-term monitoring data indicated more than 95% of southern right whales using key calving areas were also found to occur within 1 km of the shore, typically in shallow sheltered environments, such as Head Bight, Fowlers Bay and Encounter Bay in SA (O'Shannessy *et al.* 2025). For the western population, breeding occurs in Exmouth Gulf and in calving areas along the south coast of WA outside of the NWMR (DCCEEW 2024a). A stranding record exists for the far north Kimberley coast (Atlas of Living Australia 2006). Known females have rarely been observed on the Australian coastline in the year before calving, suggesting mating and conception may predominantly occur away from calving grounds, potentially on feeding grounds (Watson *et al*. 2021, cited in DCCEEW 2024a). There is a significant energetic cost to the mother in the late stages of gestation (last trimester) and calf growth rate has been found to depend on the maternal body size and condition of the mother (Christiansen *et al.* 2018 and Christiansen *et al.* 2022, cited in DCCEEW 2024a). Foraging ecology of southern right whales is poorly understood and observations of foraging whales are rare (DCCEEW 2024a). There is evidence of an increase in the western population, whereas there is greater uncertainty of the population status and trends of the eastern population (DCCEEW 2024a). Southern right whale abundance in Australian waters is still far below estimated historic abundance (>20%) (DCCEEW 2024a). Long-term monitoring data from SA indicate population growth has slowed since around 2016, with average annual increases estimated at 3.34% for all individuals and 3.93% for cow–calf pairs. These rates are lower than those recorded in earlier decades (O'Shannessy *et al.* 2025). Abundance and reproductive success in southern right whales are primarily tied to foraging success and body condition, with southern right whales relying on stored energy reserves for reproductive success. A recent study identified declining reproductive performance in the WA southern right whale population, with calving intervals increasing from 3.4 to 4.1 years since, with sustained longer breeding intervals evident since 2015 (*Charlton et al*. 2026). This reproductive decline is associated with climate-driven trophic changes in key southern right whale offshore foraging areas. Since 2013, reduced Antarctic sea ice in high-latitude habitats has altered ecosystem structure and krill-based food webs, while mid-latitude regions have experienced warming, declining chlorophyll-a, and reduced prey availability since 2010 (Charlton *et al.* 2026). Calving intervals began increasing around 2010, with significant population-level shifts evident by 2015. This trend corresponds with a decline in the western population's growth rate from about 2016 onward (Charlton *et al.* 2026). There are a reproduction BIA and habitat critical to survival for the southern right whale within Exmouth Gulf (DCCEEW 2024a). A migration BIA extends 3 nm out from the coastline from Ningaloo and spans down the WA coastline and across the south and south-east coast of Australia (DCCEEW 2024a). Nursing and calving behaviours are known to occur within reproductive BIAs. Habitat critical to survival for the southern right whale has been identified as all reproductive BIAs across the species range (DCCEEW 2024a). See Figure 8-1 and Section 8.2.3 for habitat critical to survival for southern right whales in the NWMR. See Table 8-3 and Figure 8-5 for BIAs for southern right whales in the NWMR

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Species	Key information
Antarctic minke whale	The Antarctic minke whale has a circumpolar distribution south of 60°S during summer (Risch *et al.* 2019) and has been recorded off all Australian states (apart from the NT) in winter (see the DCCEEW SPRAT profile). Their seasonal distribution and migration patterns are poorly understood (Risch *et al.* 2019). The species is highly associated with sea ice and feeds in cold Antarctic waters over the summer. It is thought the Antarctic minke whale migrates through offshore waters of WA to about 20°S to feed and possibly breed (Bannister *et al.* 1996). Information about timing and distribution, behaviour (migration and breeding) within the NWMR, however, is presently not known. In the high latitudinal winter breeding grounds in other regions, the species appears to be distributed off the continental shelf edge. No population estimates are available for Antarctic minke whales in Australian waters. Acoustic detection has been recorded for the Perth Canyon and Exmouth Plateau (McCauley 2011b), and more recently acoustic detection indicated presence in offshore waters of NWS in late October and all of November and was absent (based on no vocalisation and detection) in December 2021 to March 2022 (over a monitoring period from October 2021 to March 2022) (Warren *et al.* 2023). There are no identified BIAs for this species in the NWMR.
Sei whale	The sei whale is a baleen whale with a worldwide oceanic distribution, expected to seasonally migrate between low latitude wintering areas and high latitude summer feeding grounds (Bannister *et al.* 1996; Prieto *et al.* 2012). There are no known mating or calving areas in Australian waters. The species prefers deep waters, typically occurs in oceanic basins and continental slopes (Prieto *et al.* 2012), and exhibits a migration pathway influenced by seasonal feeding and breeding patterns. Sei whales have been infrequently recorded in Australian waters (Bannister *et al.* 1996). Reliable estimates of the sei whale population size in Australian waters are currently not possible due to a lack of dedicated surveys and their elusive characteristics. Similarly, the extent of occurrence and area of occupancy of sei whales in Australian waters cannot be calculated due to the rarity of sighting records. They will typically travel in small pods of three to five individuals, with some segregation by age, sex and reproductive status. Calving grounds are presumed to exist in low latitudes with mating and calving potentially occurring during winter months (Threatened Species Scientific Committee 2015a). There are no known mating or calving areas in Australian waters, and no identified BIAs for this species in the NWMR.
Fin whale	The fin whale is a large baleen whale distributed worldwide. Fin whales migrate annually between high latitude summer feeding grounds and lower latitude overwintering areas (Bannister *et al.* 1996) and follow oceanic migration paths. The species is uncommonly encountered in coastal or continental shelf waters. Australian Antarctic waters are important feeding grounds for fin whales but there are no known mating or calving areas in Australian waters (Morrice *et al.* 2004). The species has been observed in groups of six to ten individuals, as well as in pairs and alone (Threatened Species Scientific Committee 2015c). Accurate distribution patterns are not known within Australian waters and most data are from stranding events. Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley *et al.* 2000). It is currently not possible to accurately estimate the population size of fin whales in Australian waters predominantly due to the species' behaviour and local ecology, as the proportion of time they spend at the surface varies greatly depending on these factors. In addition, natural fluctuations of fin whales in Australian waters are unknown, but long-range movements do appear to be prey related (Aulich *et al.* 2022). A recent study by Aulich *et al.* (2022) used passive acoustic monitoring as a tool to identify the migratory movements of fin whales in Australian waters. On the west coast, the earliest arrival of these animals from Antarctica occurred at Cape Leeuwin in April, and between May and October they migrated along the WA coastline to the Perth Canyon, which likely acts as a feeding zone for migratory whales (Aulich *et al.* 2022). Some whales were found to continue migrating northwards along the WA coastline, with vocalisation presence recorded as far north as Dampier between August and late October (Aulich *et al.* 2022). There are no identified BIAs for this species in the NWMR.
Omura's whale	Omura's whale is a species of baleen whale that was first described in 2003. Previously specimens of Omura's whale were identified as pygmy/dwarf Bryde's whales, but morphological and molecular evidence identified Omura's whale as a distinct species not closely related to Bryde's whale in 2003 (Ottewell *et al.* 2016). It was believed the range of Omura's whale was restricted to the eastern Indo-Pacific, but recent discoveries suggest the species may have a more widespread distribution (Ottewell *et al.* 2016; Cerchio *et al.* 2019). In Australia, presence of this species was confirmed in 2015 when, what was later determined to be an Omura's whale, was stranded on the northwest coast of Australia, near Exmouth (Ottewell *et al.* 2016). An in-depth review by Cerchio *et al.* (2019) concluded Omura's whale can primarily be found in tropical and warm-temperate waters and is currently known from all

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Species	Key information
	ocean basins, excluding the central and eastern Pacific. Further, a strong tendency toward a coastal and neritic water distribution was found, although there were several pelagic water records, most of which were on the continental shelf and within shallow seas throughout the documented range (Cerchio *et al.* 2019). Passive acoustic monitoring indicates Omura's whales are present across multiple regions of northern Australian waters, with vocal detections extending from northwest Australia (Timor Sea, Kimberley, Pilbara and Gascoyne) to the Great Barrier Reef. Vocalisations were recorded repeatedly over extended periods (hours), indicating extended vocal activity and consistent species presence within the monitoring locations (Browne *et al.* 2025). While detections occurred across all surveyed regions, differences in call occurrence were observed (Browne *et al*. 2025). The Warren *et al.* (2023) targeted passive acoustic monitoring program to detect southbound migratory pygmy blue whales ran from late October 2021 to March 2022, with a deepwater acoustic long-term observatory lander (900 m depth) to the west of the Montebello Trough and C-lander (190 m depth) at the outer edge of the NWS. Calls of the Omura's whales were detected at both locations throughout the recording period. Detections were, however, more common at the deeper water location, in terms of both number of detection days and number of detection hours per day (Warren *et al.* 2023). The shelf edge location showed Omura's whale present primarily in December, but this lander malfunctioned and stopped recording in mid-January 2022. An offshore trial of distributed acoustic sensing using fibre optic cables (submarine telecommunications cable) to detect low-frequency whales recorded vocalising Omura's whales within a 12 km detection range along a 50 km long area on the outer edge of the NWS (Debens *et al.* 2024). Omura's whale detections were made from the beginning of December 2023 through to mid-January 2024 (and the end of the trial). Currently little is known about the ecology and life history characteristics of Omura's whale, resulting in an IUCN listing of Data Deficient. There are no identified BIAs for this species in the NWMR.
Toothed whales (Odontoceti) – high frequency hearing	
Sperm whale	Sperm whales are the largest of the toothed whales and are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges (Bannister *et al.* 1996). The species tends to inhabit offshore areas at depths of 600 m or more and is uncommon in waters less than 300 m deep (Ceccarelli *et al.* 2011). There is limited information about sperm whale distribution in Australian waters, but they are usually found in deep offshore waters, with more dense populations near continental shelves and canyons. In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males. Detailed information about the distribution and migration patterns of sperm whales off the WA coast is not available. Females with young may reside within the NWMR all year, males may migrate through the region, and the species may be associated with canyon habitats (Ceccarelli *et al.* 2011).Sperm whales have been recorded in deep waters off North West Cape and appear to occasionally venture into shallower waters in other areas. Twenty-three sightings of sperm whales (variable pod sizes, ranging from one to six animals) were recorded by marine mammal observers during the North West Cape multi-client 3D marine seismic survey (December 2016 to April 2017) (Woodside 2020). These animals were observed in deep, continental slope waters of the Montebello Saddle (maximum distance of about 90 km from North West Cape), and the waters overlying the canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF. The deep waters above the gully/saddle on the inner edge of the plateau (the Montebello Saddle) are thought to be important for sperm whales that may feed in the region (based on 19th century whaling records; Townsend 1935). Recent studies such as acoustic detection indicated sperm whale presence in deep, offshore waters but not at the edge of the NWS (over a monitoring period of October 2021 to March 2022, for the deepwater location). However, while sperm whales were detected every month, occurring in bouts, there was no evidence for lasting use of the area around this recording location (Warren *et al.* 2023), Ferriera *et al.* (2024) reported sperm whale sightings off North West Cape in May 2023. A total of 26 individual sperm whales were sighted about 30 km offshore in groups up to ten individuals. The sperm whales were observed displaying surface logging behaviour, with frequent and numerous blows before flukes-up dives (indicative of deep feeding behaviour). Such aggregations appear to be an annual occurrence and at the same time as migratory pygmy blue whale feed and move through the same area, to the west and offshore of Ningaloo and North West Cape. Sperm whales produce foraging sounds during deep dives, but their echolocation clicks have much lower peak frequencies (about 15 kHz) than the detection bandwidth that high-frequency acoustic monitoring systems use on the NWS. As a result, sperm whales are unlikely to be detected by recorders, despite being one of several deep-diving toothed whale species that regularly forages in the region (Madhusudhana *et al.* 2026).

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Species	Key information
	There are no identified BIAs for this species in the NWMR.
Orca (killer whale)	The preferred habitat of killer whales (*Orcinus orca*) includes oceanic, pelagic and neritic (relatively shallow waters over the continental shelf) regions, in both warm and cold waters. Killer whales appear to be more common in cold, deep waters, but have been observed along the continental slope and shelf, particularly near seal colonies, and in shallow coastal areas of WA (Bannister *et al.* 1996; Thiele and Gill 1999). The total number of killer whales in Australian waters is unknown, but the total number of mature animals within waters around the continent may be less than 10,000. Killer whales are known to make seasonal movements, and probably follow regular migratory routes, but no information is available for the species in Australian waters. There is thought to be at least three distinct groups of killer whales in Australian waters, with key groups in the South-east Marine Region, the SWMR and NWMR. These groups appear to vary depending on broader tropical and temperate environmental conditions that influence prey choices, habitat preferences and phenotypic traits (Hutchings *et al.* 2025). Recent species distribution modelling of killer whales in Australian waters has provided a large-scale assessment of potential habitat suitability of these regional populations. The modelling identified areas of higher habitat suitability in WA, including nearshore and reef-associated waters of the Ningaloo Reef region during the astral winter, and in the SWMR during February and March, consistent with sighting records. Suitable habitat in the NWMR was concentrated in nearshore and reef environments, particularly along Ningaloo Reef, extending north to offshore reefs and islands in the Kimberley, and southwards along the coast to Carnarvon and Geraldton. These areas are characterised by oceanographic conditions and enhanced productivity that support prey aggregations, including migratory baleen whales, which killer whales are known to target in the region. Environmental predictors demonstrated clear ecological differentiation between killer whale groups, with the northwest population showing a preference for warm tropical waters in contrast to temperate-associated groups in southern regions (Hutchings *et al.* 2025). Killer whales are top-level carnivores. There are reports from around Australia of attacks on dolphins, juvenile humpback whales, blue whales, sperm whales, dugongs and Australian sea lions (Bannister *et al.* 1996). Killer whales target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman *et al.* 2015). Overall, observations suggest humpback calves are a predictable, plentiful and readily taken prey source for killer whales off Ningaloo Reef for at least five months of the year. There are also records of killer whales attacking dugongs in Shark Bay (Anderson and Prince 1985). However, attacks appear opportunistic as there are no recognised key localities or important habitats for killer whales within the NWMR (DSEWPaC 2012a). There are no identified BIAs for this species in the NWMR.
Australian snubfin dolphin	Stranding and museum specimen records indicate Australian snubfin dolphins occur only in waters off northern Australia, from around Broome on the west coast to the Brisbane River on the east coast (Parra *et al.* 2002). Aerial and boat-based surveys indicate Australian snubfin dolphins occur mostly in protected shallow waters near the coast, and near river and creek mouths (Parra 2006; Parra *et al.* 2006; Parra *et al.* 2002). Within the NWMR, this species has been found in the shallow coastal waters and estuaries along the Kimberley coast. Beagle and Pender bays on the Dampier Peninsula, and tidal creeks around Yampi Sound and between Kuri Bay and Cape Londonderry, are important areas for Australian snubfin dolphins (DEWHA 2008a). Roebuck Bay has generally been considered the south-western limit of snubfin dolphin distribution across northern Australia, but the species has been recorded in Port Hedland harbour, Dampier Archipelago, Montebello Islands, Exmouth Gulf and off North West Cape (Allen *et al.* 2012). Roebuck Bay supports one of the largest known populations of Australian snubfin dolphins (D'Cruz *et al.* 2022). A first comprehensive catalogue of snubfin dolphin sightings has been compiled for the Kimberley, north-west WA (Bouchet *et al.* 2021) and documented that snubfin dolphins are consistently encountered in shallow water (<21 m depth) near (<15 km) freshwater inputs, with high detection rates in known hotspots such as Roebuck Bay and Cygnet Bay and suitable coastal habitat in the wider Kimberley region. Table 8-3 and Figure 8-6 present the location and type of BIAs for Australian snubfin dolphins in the NWMR.

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Species	Key information
Indo-Pacific humpback dolphin (Australian humpback dolphin)	Previously included with *Sousa chinensis*, the Australian humpback dolphin (*S. sahulensis*) was elevated to a species in 2014. *S. chinensis* is now applied for humpback dolphins in the eastern Indian and western Pacific oceans and *S. sahulensis* for humpback dolphins in the waters of the Sahul Shelf from northern Australia to southern New Guinea (Jefferson and Rosenbaum 2014). The Australian humpback dolphin is listed as *S. chinensis* under the EPBC Act. The Australian humpback dolphin (referred to as 'humpback dolphin' hereafter) inhabits the tropical/subtropical waters of the Sahul Shelf across northern Australia and southern Papua New Guinea (Jefferson and Rosenbaum 2014). Based on historical stranding data, museum specimens and opportunistic sightings collected during aerial and boat-based surveys for other fauna, it has been inferred that humpback dolphins occur from the WA/NT border to the south-west to Shark Bay (Hanf *et al.* 2016). Allen *et al.* (2012) suggested humpback dolphins use a range of inshore habitats, including clear and turbid coastal waters across northern WA. The waters surrounding North West Cape are an important area for the species. Boat-based surveys up to 5 km from the coast (Brown *et al.* 2012) recorded humpback dolphins from 0.3 to 4.5 km away from shore and in depths ranging from 1.2 to 20 m, with a mean of about 8 m. Other studies around North West Cape, surveying waters up to 5 km from the coast, recorded humpback dolphins in water depths of up to 40 m (Hanf *et al.* 2016). Based on density, site fidelity and residence patterns, the North West Cape has been identified as an important habitat at the southwestern limit of this species' range (Hunt *et al.* 2017). Additionally, Brown *et al.* (2014) reported evidence of hybridisation between the Australian snubfin and humpback dolphin populations in north-western Australia. Aerial line-transect surveys across the Pilbara between 2015 and 2017 produced modelled abundance estimates for Australian humpback dolphins of 1,546 (2016) and 2,690 (2017) (Raudino *et al.* 2023). Densities were highest in nearshore waters, with hotspots in Exmouth Gulf, Dampier Archipelago and the Great Sandy Islands. However, aerial surveys targeting other marine species over the western Pilbara have recorded humpback dolphins more than 50 km from the mainland in shallow shelf waters (<30 m deep) near Barrow Island and the western Lowendal Islands (Hanf 2015). The species has also been recorded in fringing coral reef and shallow, sheltered sandy lagoons at the Montebello Islands (Raudino *et al.* 2018). Humpback dolphins do not appear to undergo large-scale seasonal migrations, although seasonal shifts in abundance have been observed (Parra and Cagnazzi 2016, cited in DCCEEW 2023a). Table 8-3 and Figure 8-7 provide the location and type of BIAs for Australian humpback dolphins in the NWMR.
Indo-Pacific bottlenose dolphin (spotted bottlenose dolphin)	There are four known subpopulations of spotted bottlenose dolphins, of which the Arafura/Timor Sea populations were identified as potentially occurring within the NWMR. The species is restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters, including coastal areas around oceanic islands, from Shark Bay to the western edge of the Gulf of Carpentaria. The species forages in a range of habitats but is generally restricted to water depths of less than 200 m (DSEWPaC 2012a). Important foraging and breeding areas include the shallow coastal waters and estuaries along the Kimberley coast and Roebuck Bay. A study at North West Cape found spotted bottlenose dolphins were more likely to occur in coastal lagoons west of North West Cape during winter months than other seasons. In spring, the probability of occurrence was higher outside of the Ningaloo Marine Park, although summer data was not included in this study (Haughey *et al.* 2021). Aerial transect surveys in the Kimberley region showed the abundance for bottlenose dolphins has been declining, with estimated abundance of 3,713 individuals in 2015, 2,638 in 2016 and 1,635 in 2017. Spotted bottlenose dolphins off North West Cape exhibit a highly fluid spatial and temporal structure, characterised by loose, non-random associations with low temporal stability and frequent turnover of individuals. The absence of distinct social clusters indicates an open, fission–fusion population, with space use and associations varying over short timeframes rather than reflecting stable, long-term groupings (Edwards *et al.* 2025). Spatial data collected in Ningaloo Marine Park between 2013 and 2019 showed the distribution of foraging groups was related to distance from the nearest boat ramp and seabed slope, with the foraging dolphins more likely to occur 3,000 to 5,000 m from the nearest boat ramp and in areas of moderate seabed slope. Resting dolphins were localised and most likely to occur in shallow waters (5 to 10 m deep) within designated Sanctuary Zones of the Ningaloo Marine Park. Dolphins travelling were more likely to occur 1,000 to 2,000 m from the coast and in water depths of 7 to 12 m, but were observed to reach depths of 20 m (Haughey *et al.* 2025). Table 8-3 and Figure 8-8 provide the location and type of BIAs for spotted bottlenose dolphins in the NWMR.

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8.2.2 Dugongs

The dugong is listed as migratory under the EPBC Act (DSEWPaC 2012a).

Seagrass meadows in coastal waters, estuarine creeks and streams within and adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, Ningaloo Reef, Broome and the Kimberley coast, as well as offshore seagrass meadows at Ashmore Reef (DSEWPaC 2012a). Dugongs are distributed along the WA coast throughout the Gascoyne, Pilbara and Kimberley regions. Specific areas supporting dugong populations include Shark Bay, Ningaloo Reef, Exmouth Gulf, the Pilbara coast (Exmouth Gulf to De Grey River [Marsh *et al.* 2002]), Eighty Mile Beach, and the Kimberley coast, including Roebuck Bay (Bayliss and Hutton 2017). Dugong distribution is correlated with the seagrass habitats upon which it feeds, although water temperature has also been correlated with dugong movements and distribution (Preen *et al.* 1997; Preen 2004). Even areas with sparse seagrass coverage (e.g. 2 to 10% in the Pilbara) can serve as a key driver of dugong presence and abundance (Said *et al.* 2025).

Dugongs are highly migratory and have been observed moving large distances (DSEWPaC 2012a). Although the patterns of dugong movement in WA are not well understood, it is suggested dugong movements are influenced by water temperatures (Holley *et al.* 2006; Marsh *et al.* 2011) and the availability of seagrass foraging habitats (Marsh *et al.* 1994; Preen *et al.* 1997; Said *et al.* 2025). Dugongs are typically associated with shallow waters (<100 m), which support the growth of subtropical and tropical seagrass meadows (Marsh *et al.* 2025). Dugongs are known to migrate between seagrass habitats (hundreds of kilometres) (Sheppard *et al.* 2006), and in Shark Bay they exhibit seasonal movements as a behavioural thermoregulatory response to winter water temperatures (Holley *et al.* 2006; Marsh *et al.* 2011).

Cleguer and Marsh (2023) present the most contemporary data for dugongs and population estimates via an inventory of dugong aerial surveys of Australia, including north-west Australia (Shark Bay, Ningaloo, Exmouth Gulf and Pilbara, the Kimberley region). The first standardised dugong aerial abundance surveys in Australia were conducted in the early 1980s. In regions including Shark Bay and the Ningaloo-Exmouth area, repeated surveys over several decades provide long-term datasets that suggest dugong populations are relatively stable or fluctuate over time, rather than showing clear long-term declines. In contrast, the Kimberley region has only been comprehensively surveyed in 2015 and 2017, meaning only baseline information is currently available for that region, and long-term population trends cannot yet be assessed (Cleguer and Marsh 2023).

There are BIAs for dugongs within and adjacent to waters of the NWMR (refer Section 7.2.3). Table 8-3 and Figure 8-9 provide the location and type of BIAs for dugongs in the NWMR.

8.2.3 Pinnipeds

The Australian sea lion is listed as a species that may occur or may have habitat within the NWMR (Appendix A).

The Australian sea lion's breeding range is only in SA and WA waters in the SWMR, extending from the Houtman Abrolhos Islands in WA to The Pages Islands, east of Kangaroo Island, in SA (DSEWPaC 2013a). The Australian sea lion is the only pinniped endemic to Australia (Strahan 1983) and has also been recorded within the southern extent of the NWMR in Shark Bay, WA (Kirkwood *et al.* 1992). All known breeding colonies occurring in WA and SA are considered as habitat critical to the survival of the species under the Recovery Plan for the Australian Sea Lion (DSEWPaC 2013a), noting subsequent work by Goldsworthy *et al.* (2021) has identified additional breeding sites, reflecting updated knowledge since 2013. Of these breeding sites, four are in the SWMR along the west coast of WA, including the Houtman Abrolhos Islands (Easter Group), Beagle Island, North Fisherman Island and Buller Island. There are also foraging BIAs for males and females along the west coast, extending from the Abrolhos Islands south to Rockingham. The Australian sea lion is unique among pinnipeds in being the only species that has a non-annual breeding cycle that is also temporally asynchronous across its range (DSEWPaC 2013a; Threatened Species Scientific Committee 2020). This means breeding periods (copulation and birthing) differ between colonies and can occur at various times of the year. The birth interval in Australian sea lions is about 17 to 18 months, and breeding seasons are protracted, lasting between four and nine months (Threatened Species Scientific Committee 2020).

The Australian sea lion is a specialised benthic forager, feeding primarily on the sea floor. Studies have shown the species will eat a range of prey, including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobsters and penguins (DSEWPaC 2013a; Threatened Species Scientific Committee 2020). The Australian sea lion forages predominantly on the continental shelf, with most dives occurring in

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depths of 20 to 100 m. Individuals typically travel up to about 60 km from their colony on each foraging trip, with a maximum distance of around 190 km from their colony over shelf waters.

The Australian sea lion is a member of the Otariidae (eared seals) family. It was listed as endangered in 2020 (Threatened Species Scientific Committee 2020). An assessment of the status and trends in abundance of this endemic, coastal pinniped species (Goldsworthy *et al.* 2021) documented an overall reduction in pup abundance over three generations, providing strong evidence the species meets IUCN endangered criteria.

There is no designated habitat critical to survival or identified BIAs for the Australian sea lion in the NWMR.

8.2.4 Habitat critical to survival for marine mammals

The southern right whale is the only marine mammal that has habitat critical to survival of a species defined.

The National Recovery Plan for the Southern Right Whale (DCCEEW 2024a) identifies habitat critical to survival under the EPBC Act.

Habitat critical to survival for the southern right whale has been identified as all reproductive BIAs across the southern right whale range (Figure 8-1). The identification of habitat critical to survival reflects that southern right whales display strong site fidelity to calving areas in Australian coastal waters, within and between years, over decades (Bannister 2001; Charlton *et al.* 2021; Watson *et al.* 2021, cited in DCCEEW 2024a). Reproductive areas have been identified as habitat critical to survival for the species because:

- they meet the species' essential life cycle requirements for reproduction, such as mating, calving and nursing, and reproduction is known to occur at that location
- there is a level of occupancy by individual breeding females at these locations of multiple days in any given year, and across multiple years, for long-term maintenance of the species
- they are critical for recovery of the southern right whale in terms of expanding habitat occupancy and contributing to the maintenance of genetic diversity as site fidelity may lead to small-scale genetic differences.

No 'Critical Habitat' as defined under section 207A of the EPBC Act has been identified for the southern right whale. 'Critical Habitat' is different from habitat critical to survival and only applies to Commonwealth land and sea. There are also no important cetacean habitat areas identified in the Australian Whale Sanctuary as defined under section 228A of the EPBC Act for southern right whales (DCCEEW 2024a).

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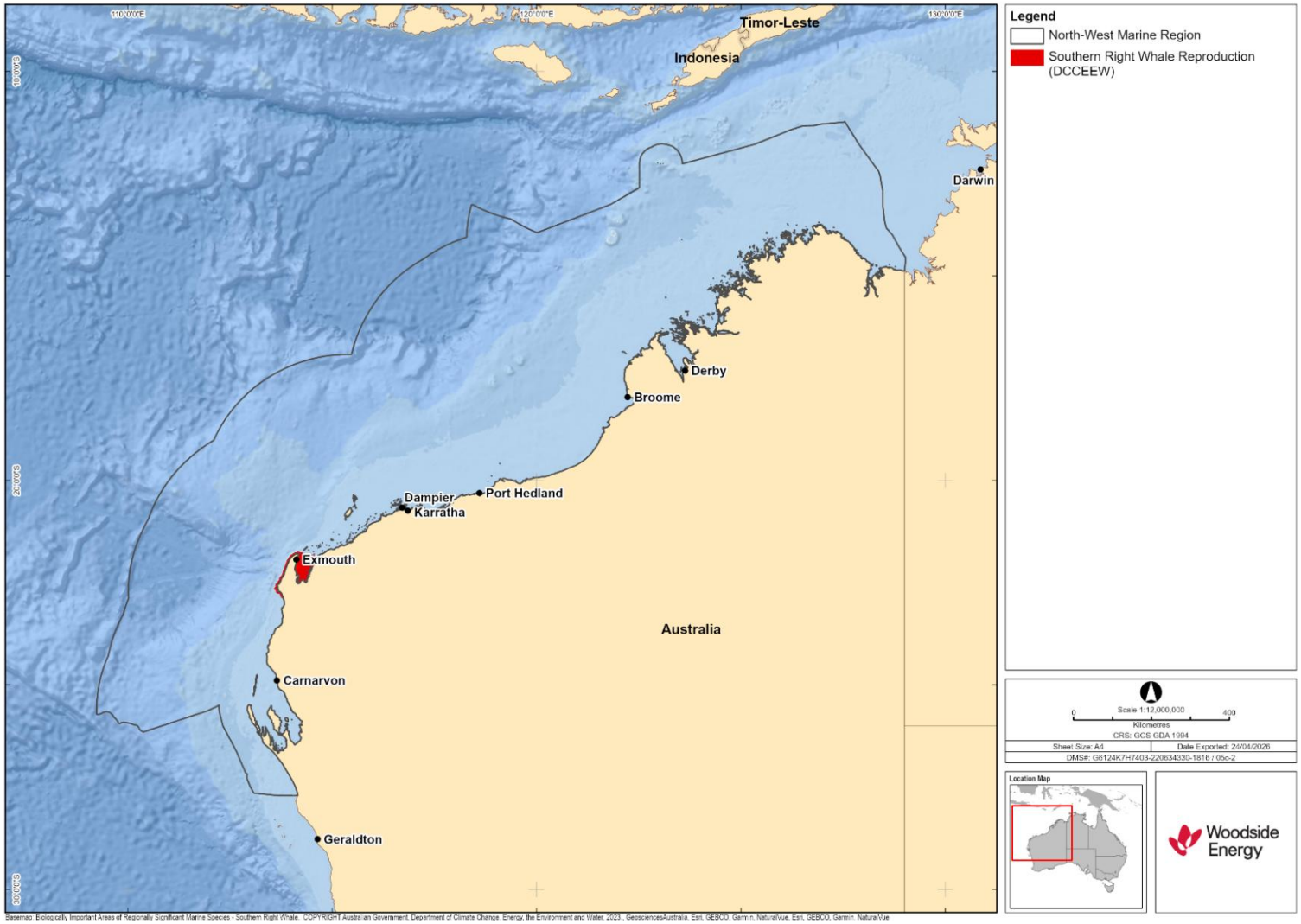


Figure 8-1: Habitat critical to the survival for the southern right whale in the NWMR

Source: DCCEEW (2024a)

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8.2.5 Marine mammal biologically important areas

A review of the Australian Marine Spatial Information System (Geoscience Australia 2026) identified BIAs representing important life cycle stages and behaviours for six species of marine mammals in the NWMR, presented in Table 8-3:

- Australian snubfin dolphin
- Indo-Pacific humpback dolphin (Australian humpback dolphin)
- Indo-Pacific/Indian Ocean spotted bottlenose dolphin
- dugong
- humpback whale
- pygmy blue whale, blue whale
- southern right whale.

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Table 8-3: Marine mammal BIAs within the NWMR

Species	Woodside activity area			BIAs				
	Browse	*NWS/ Scarborough*	*North West Cape*	*Resting*	*Foraging*[12]	*Reproduction*		*Migration*
						Breeding	*Calving*	
Australian snubfin dolphin	✓	✓	-	Cambridge Gulf Camden Sound area Prince Regent River Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area Carnot and Eagle Bay King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Pender Bay Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay, Deep Bay Port Nelson, York Sound, Prince Frederick Harbour Prince Regent River King George River Cape Londonderry Ord River Willie Creek	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay Deep Bay Port Nelson, York Sound, Prince Frederick Harbour Prince Regent River King George River Cape Londonderry Ord River Willie Creek	No migration BIA identified within the NWMR

[12] Includes areas defined as 'foraging', 'foraging likely' and 'foraging (high density prey) as per Australian Marine Spatial Information System (Geoscience Australia, 2026). These areas are shown in the BIA figures.

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Species	Woodside activity area			BIAs				
	Browse	NWS/ Scarborough	North West Cape	Resting	Foraging[12]	Reproduction		Migration
						Breeding	Calving	
Indo-Pacific humpback dolphin (Australian humpback dolphin)	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Admiralty Gulf Parry Harbour Camden Sound Area Carnot and Beagle Bay Prince Regent River Port Nelson, York Sound, Prince Frederick Harbour King Sound (south) King Sound (north) Maret Islands Bigge Island Bougainville Peninsula Pender Bay Vansittart Bay, Anjo Peninsula	Camden Sound Area Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay	Biggie Island Camden Sound Area King Sound (north) Maret Island Port Nelson, York Sound, Prince Frederick Harbour Talbot Bay Roebuck Bay Willie Creek Prince Regent River Yampi Sound	No migration BIA identified within the NWMR
Indo-Pacific/ Indian Ocean spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay, Willie Bay Camden Sound area King Sound (south) King Sound (north) Pender Bay Yampi Sound	Roebuck Bay, Willie Bay King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay, Willie Bay Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Pender Bay

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Species	Woodside activity area			BIAs				
	Browse	*NWS/ Scarborough*	*North West Cape*	*Resting*	*Foraging*[12]	*Reproduction*		*Migration*
						Breeding	*Calving*	
Dugong	✓	✓	✓	No resting BIA identified within the NWMR	Ashmore Reef (April/May) Exmouth Gulf Middle Island Ningaloo Reef Pilbara and Kimberley coast Shark Bay Roebuck Bay Dampier Peninsula	Ashmore Reef – far west (April/May) Eastern side of Dirk Hartog Island (Shark Bay) May to September Exmouth Gulf and Ningaloo year-round	Ashmore Reef – far west (April/May) Exmouth Gulf year round	Within Shark Bay June to November Roebuck Bay year-round
Humpback whale	✓	✓	✓	Kimberley/Coastal North Lacepede Island, Camden Sound (winter) Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Shark Bay	No foraging BIA identified within the NWMR	Nursing Kimberley coast from the Lacepede Islands to north of Camden Sound (mid-Aug to early Sep)	Core calving in waters off the Kimberley coast from the Lacepede Islands to north of Camden Sound (mid-Aug to early Sep)	The migration corridor extends from the coast to out to about 100 km offshore in the Kimberley region (arriving in June) extending south to North West Cape From North West Cape to south of Shark Bay the migration corridor reduces to about 50 km

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Species	Woodside activity area			BIAs				
	Browse	*NWS/ Scarborough*	*North West Cape*	*Resting*	*Foraging*[12]	*Reproduction*		*Migration*
						Breeding	*Calving*	
Pygmy blue whale, blue whale	✓	✓	✓	No resting BIA identified within the NWMR	Ningaloo Scott Reef	No breeding BIA identified within the NWMR	No calving BIA identified within the NWMR	Augusta to Derby Along the shelf edge at depths of 500 m to 1,000 m; appear near Ningaloo Coast Montebello Islands area on southern migration (north: April to Aug; south: Oct to late Dec); potentially still present January (McCauley *et al.* 2018)
Southern right whale	-	-	✓	No resting BIA identified within the NWMR	No foraging BIA identified within the NWMR	Exmouth Gulf (May to September)	No calving BIA identified within the NWMR	Migration along Australian coastline between April to October extending up to the Exmouth Gulf breeding BIA

Source: Geoscience Australia (2026)

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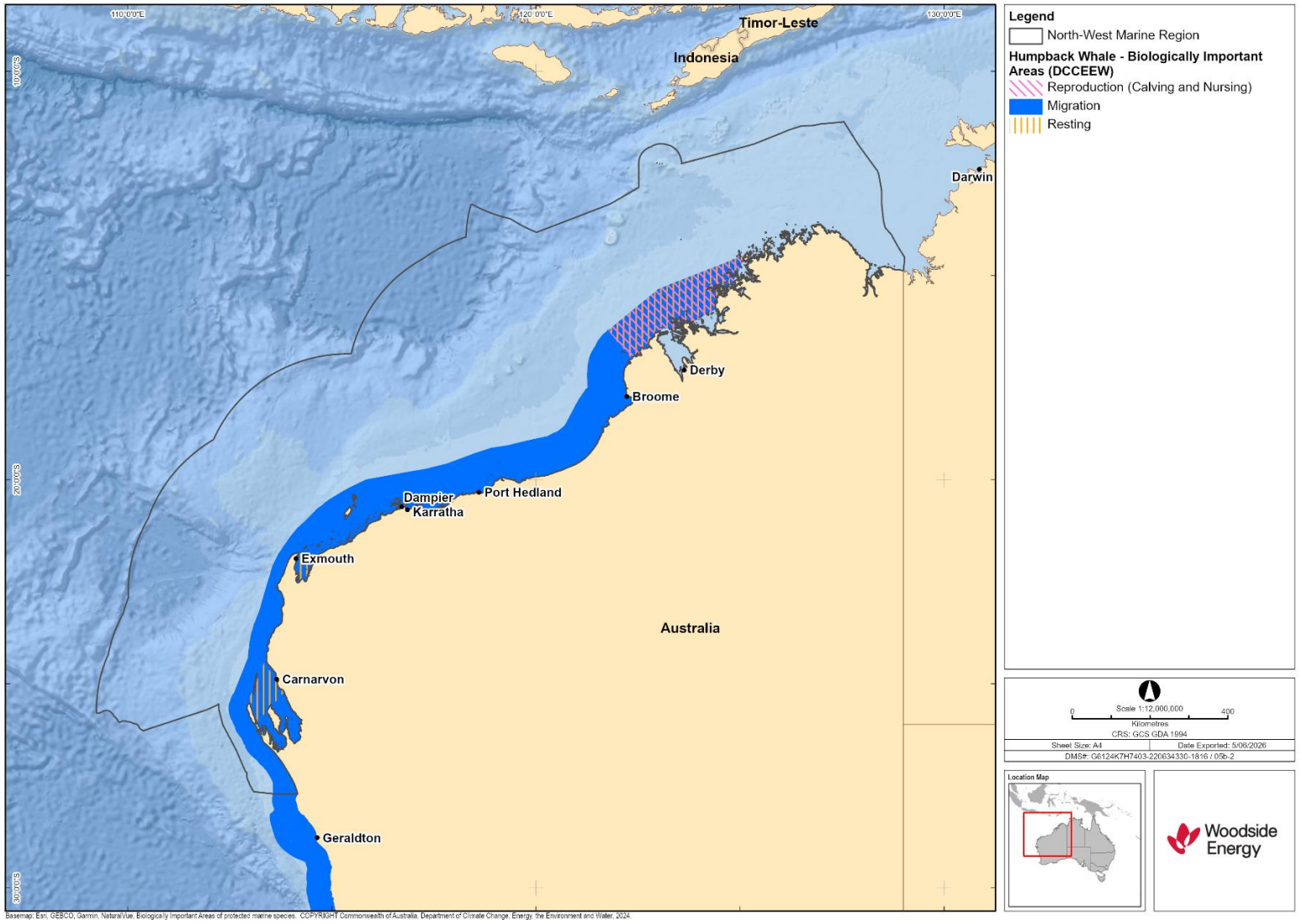


Figure 8-2: Humpback whale BIAs for the NWMR

Source: DCCEEW (2025b)

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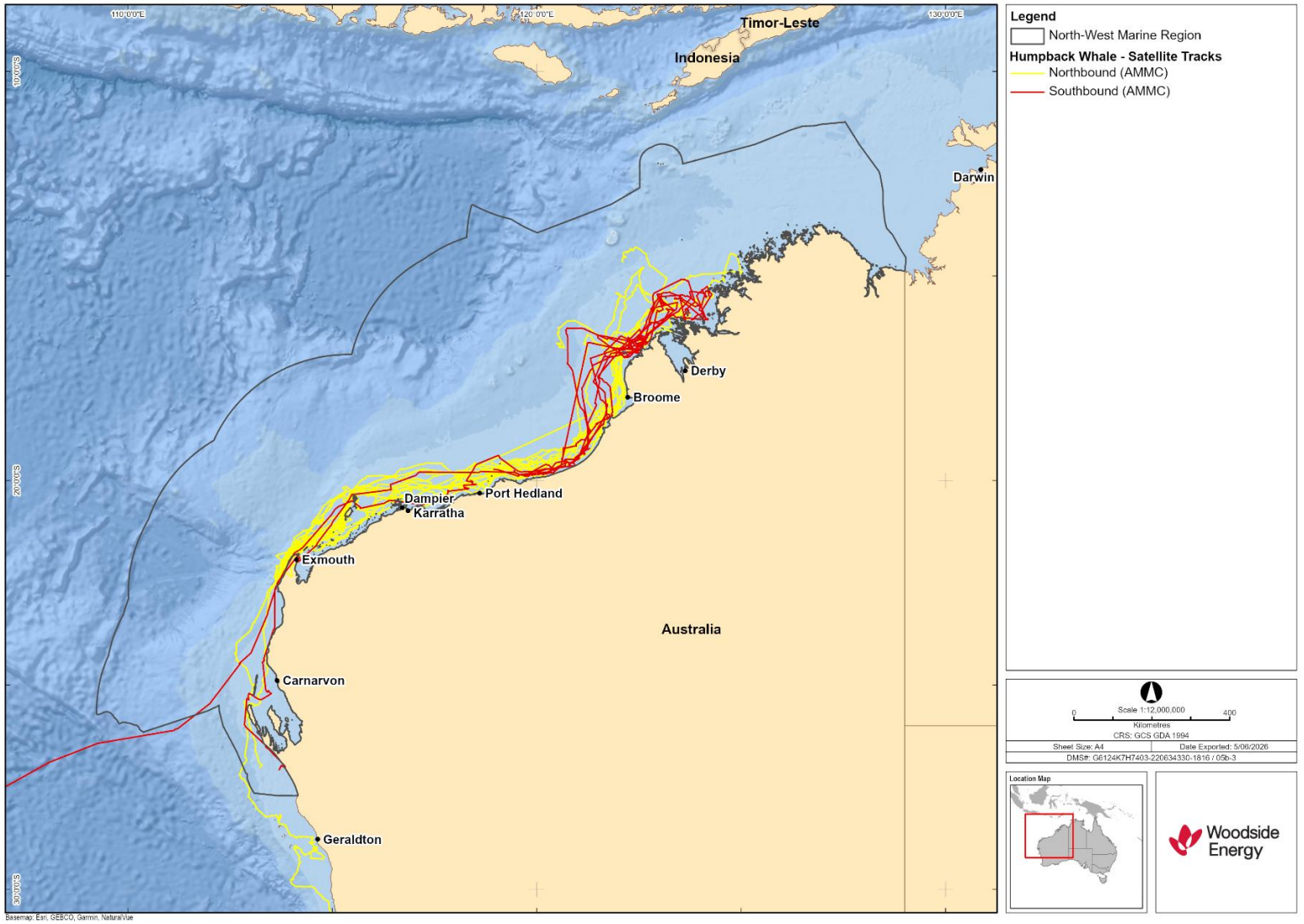


Figure 8-3: Humpback whale tagged tracks for northbound and southbound migrations

Source: Australian Marine Mammal Centre, as published in Double et al. (2010; 2012)

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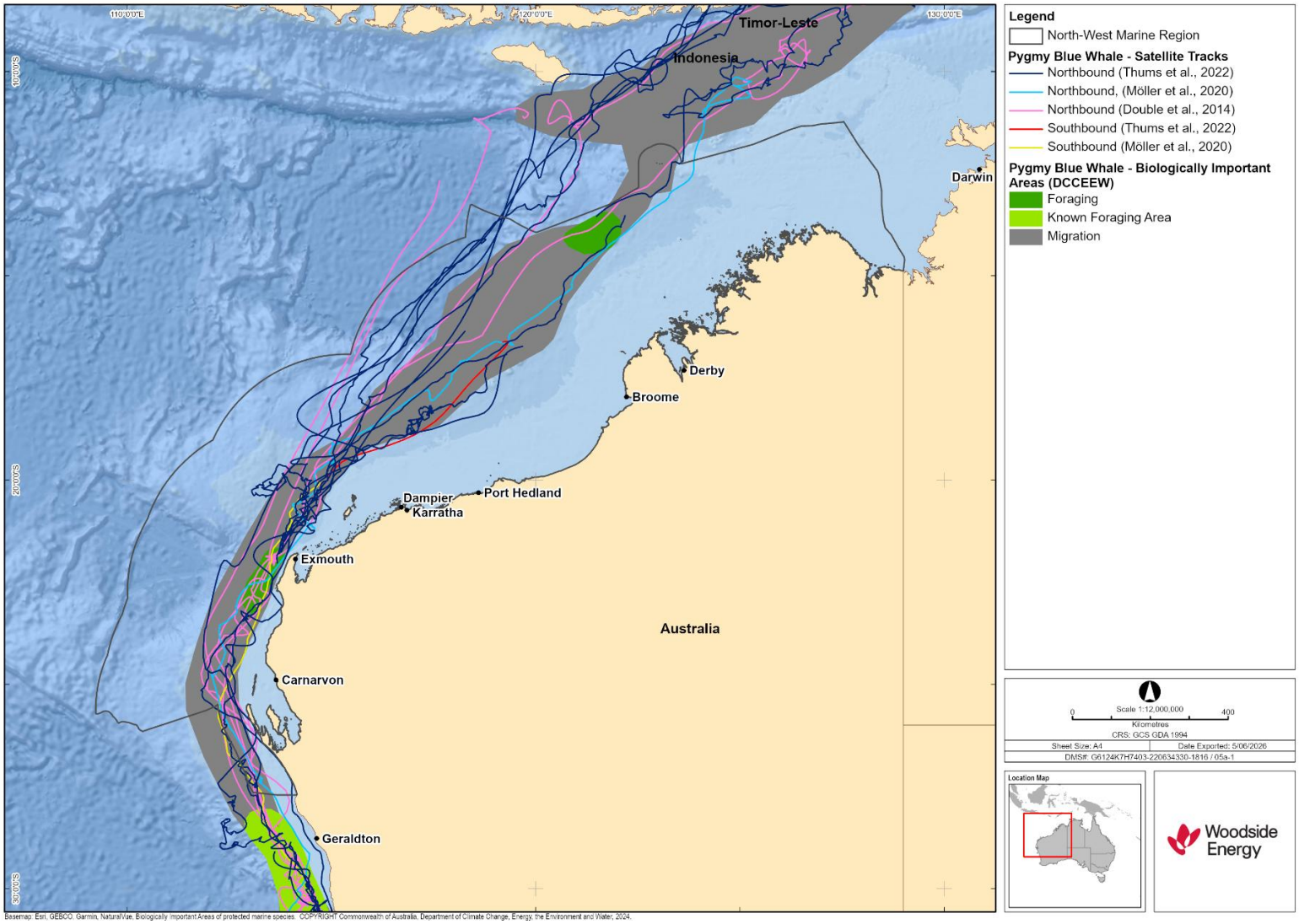


Figure 8-4: Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration

Source for BIAs: DCCEEW (2025b)

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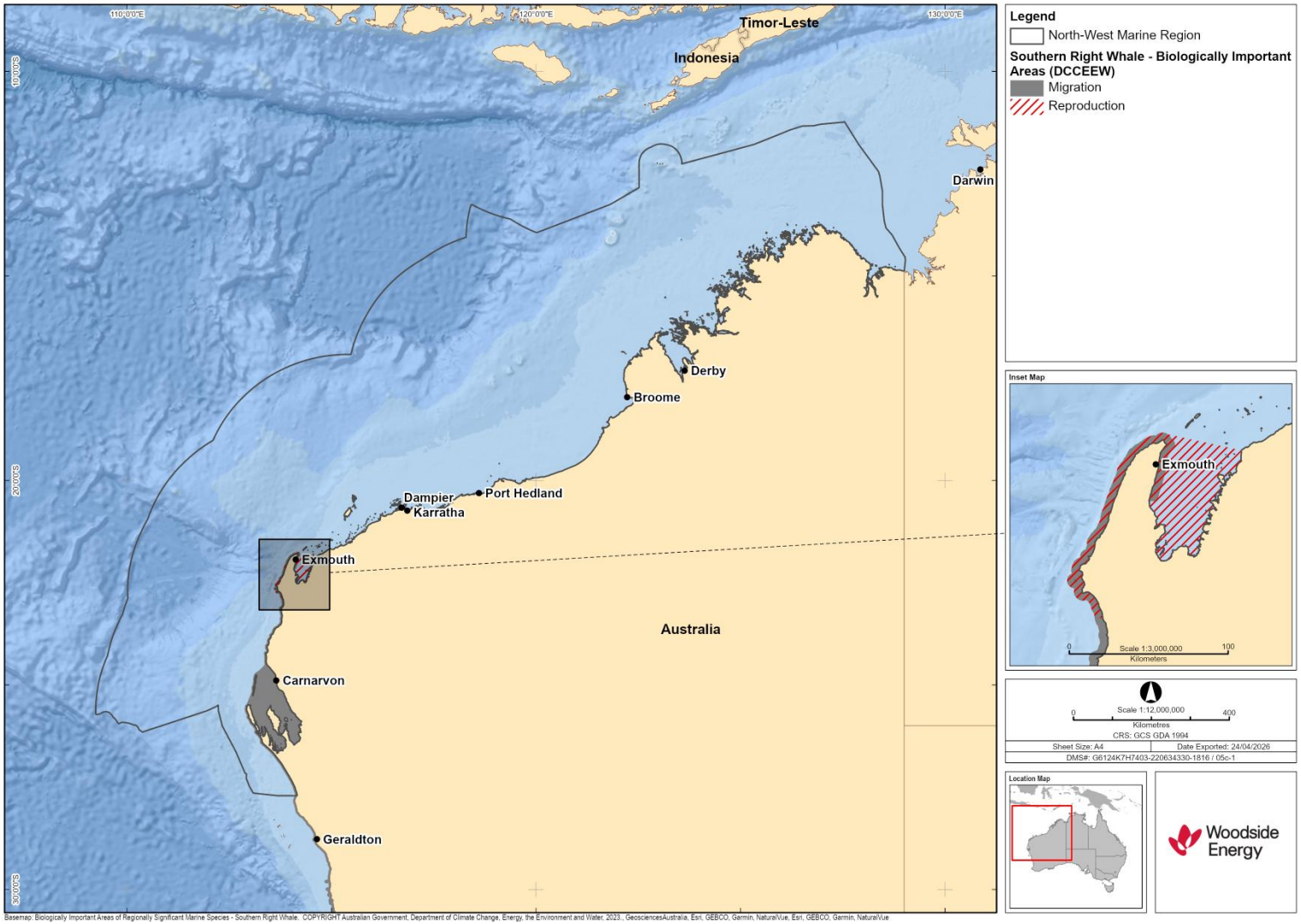


Figure 8-5: Southern right whale BIAs for the NWMR; migration and reproduction BIAs along the coast extend to 3 nm

Source: DCCEEW (2025b)

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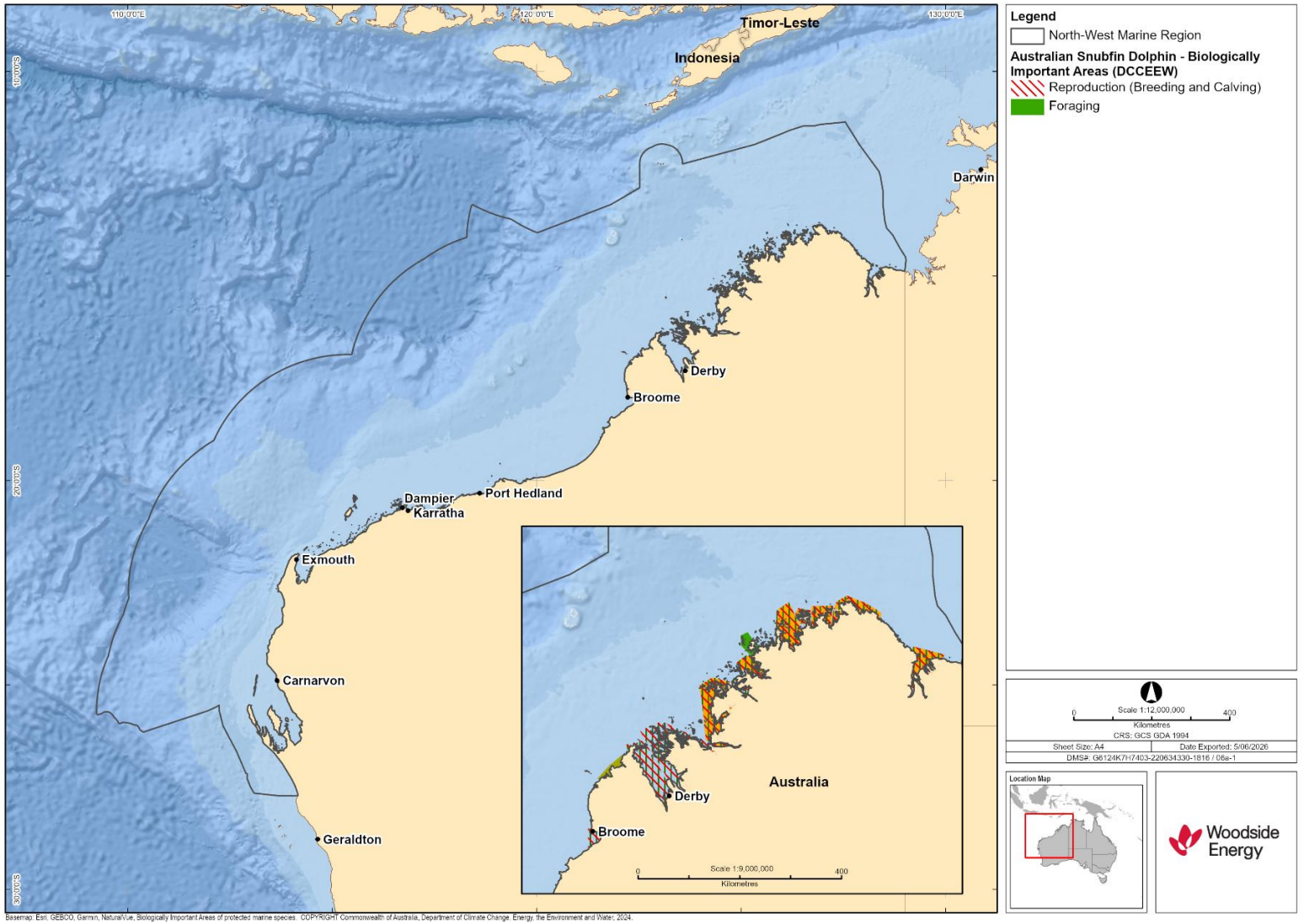


Figure 8-6: Australian snubfin dolphin BIAs for the NWMR

Source: DCCEEW (2025b)

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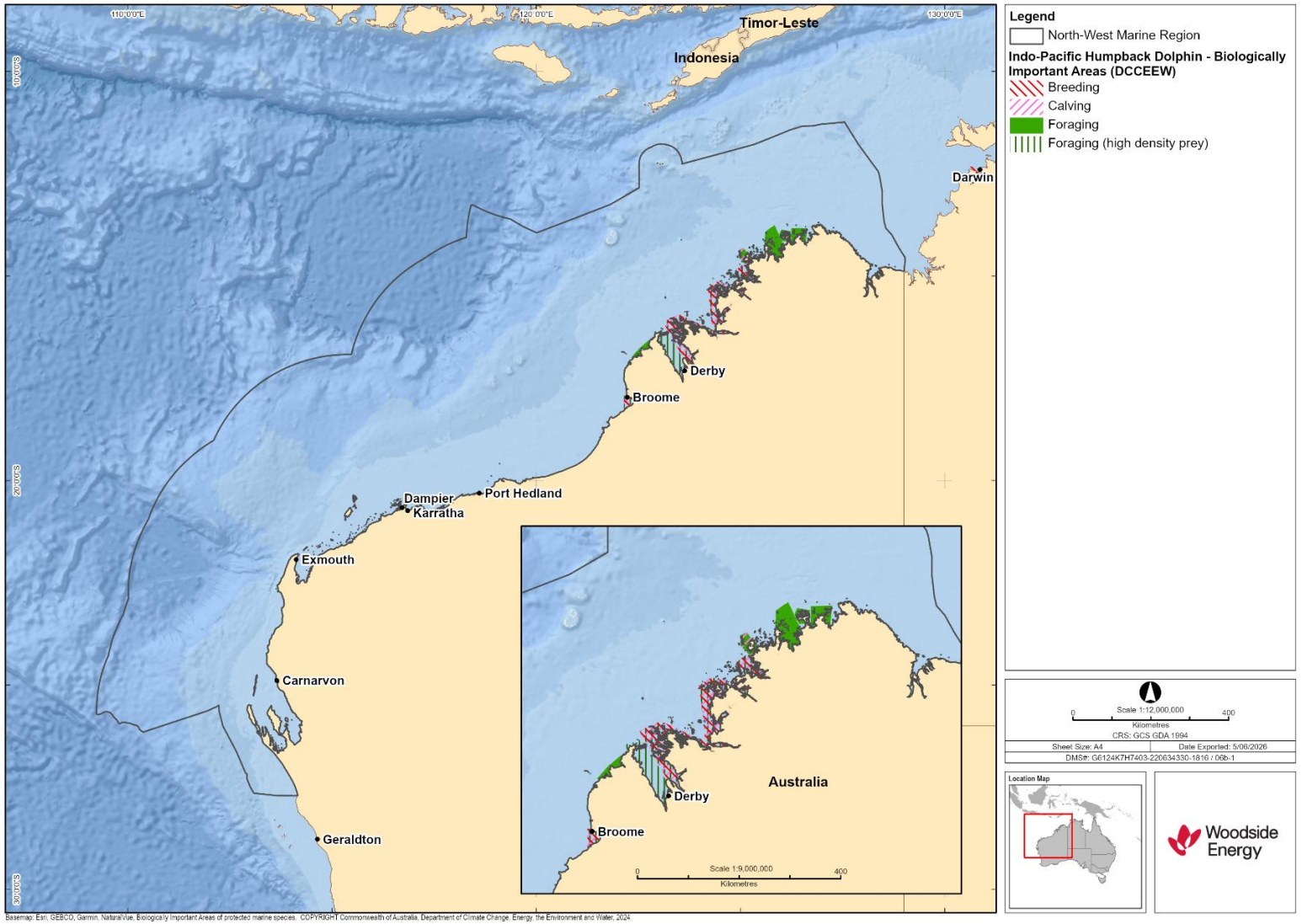


Figure 8-7: Indo-Pacific humpback dolphin BIAs for the NWMR

Source: DCCEEW (2025b)

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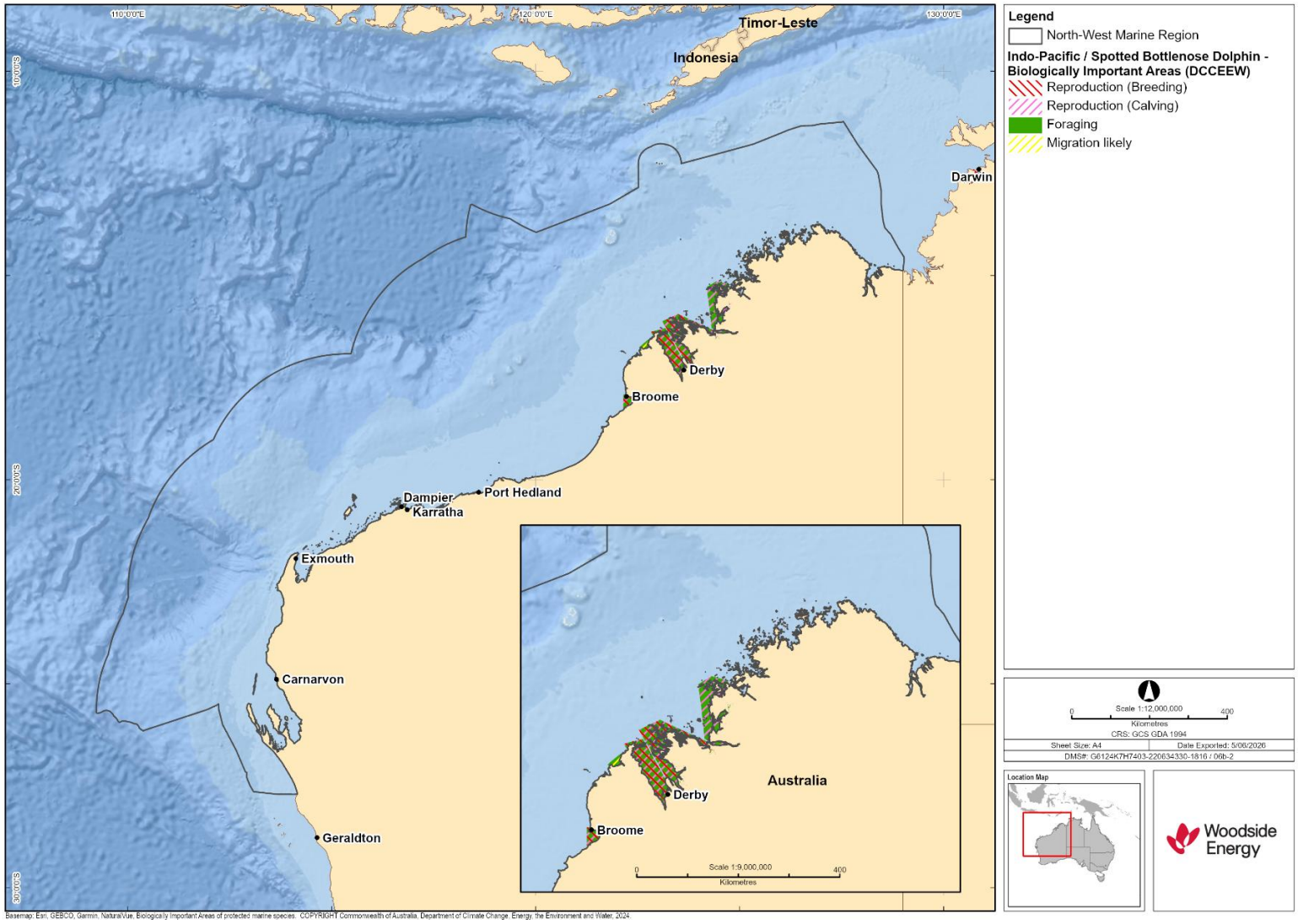


Figure 8-8: Indo-Pacific/Indian Ocean spotted bottlenose dolphin BIAs for the NWMR

Source: DCCEEW (2025b)

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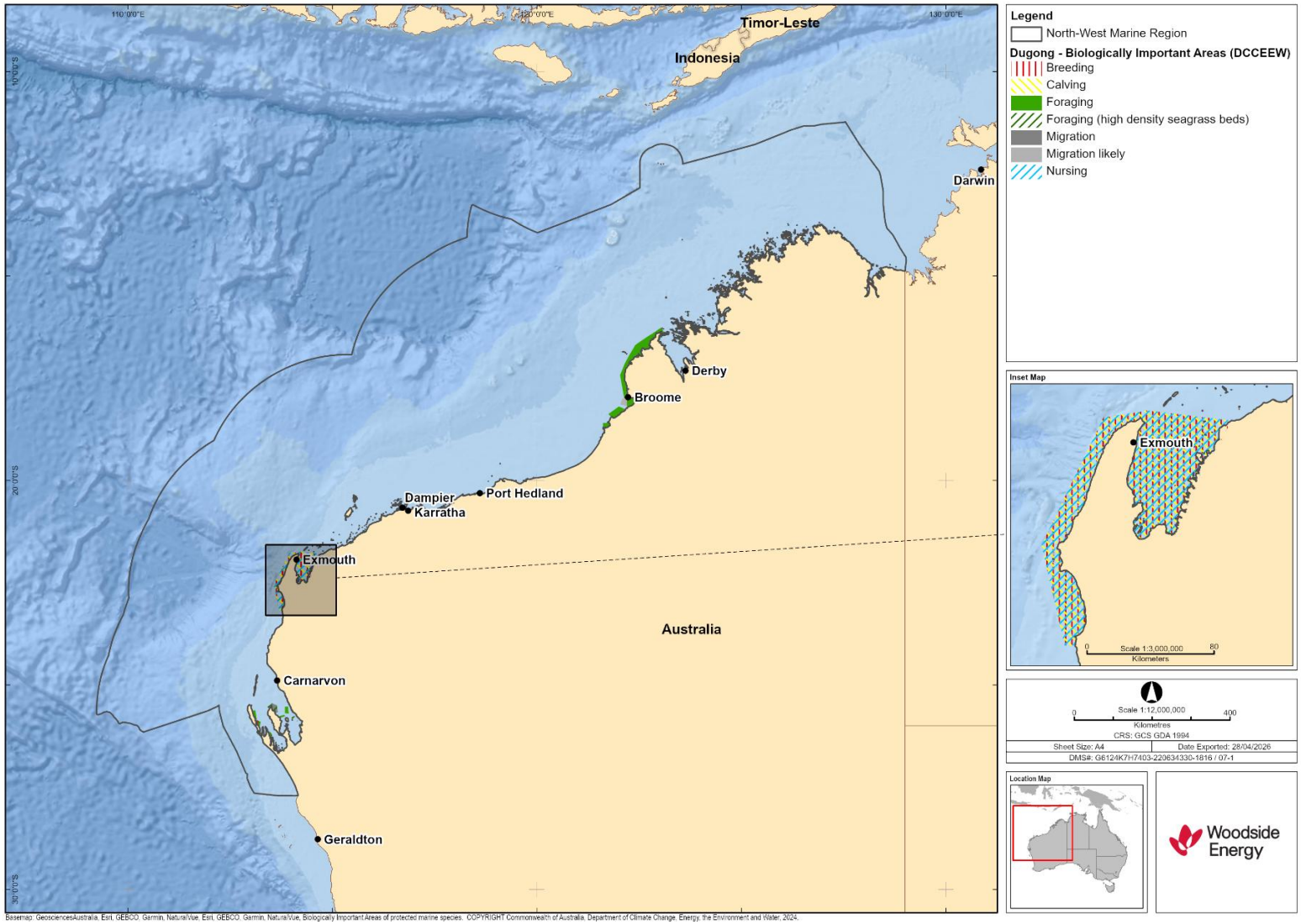


Figure 8-9: Dugong BIAs for the NWMR

Source: DCCEEW (2025b)

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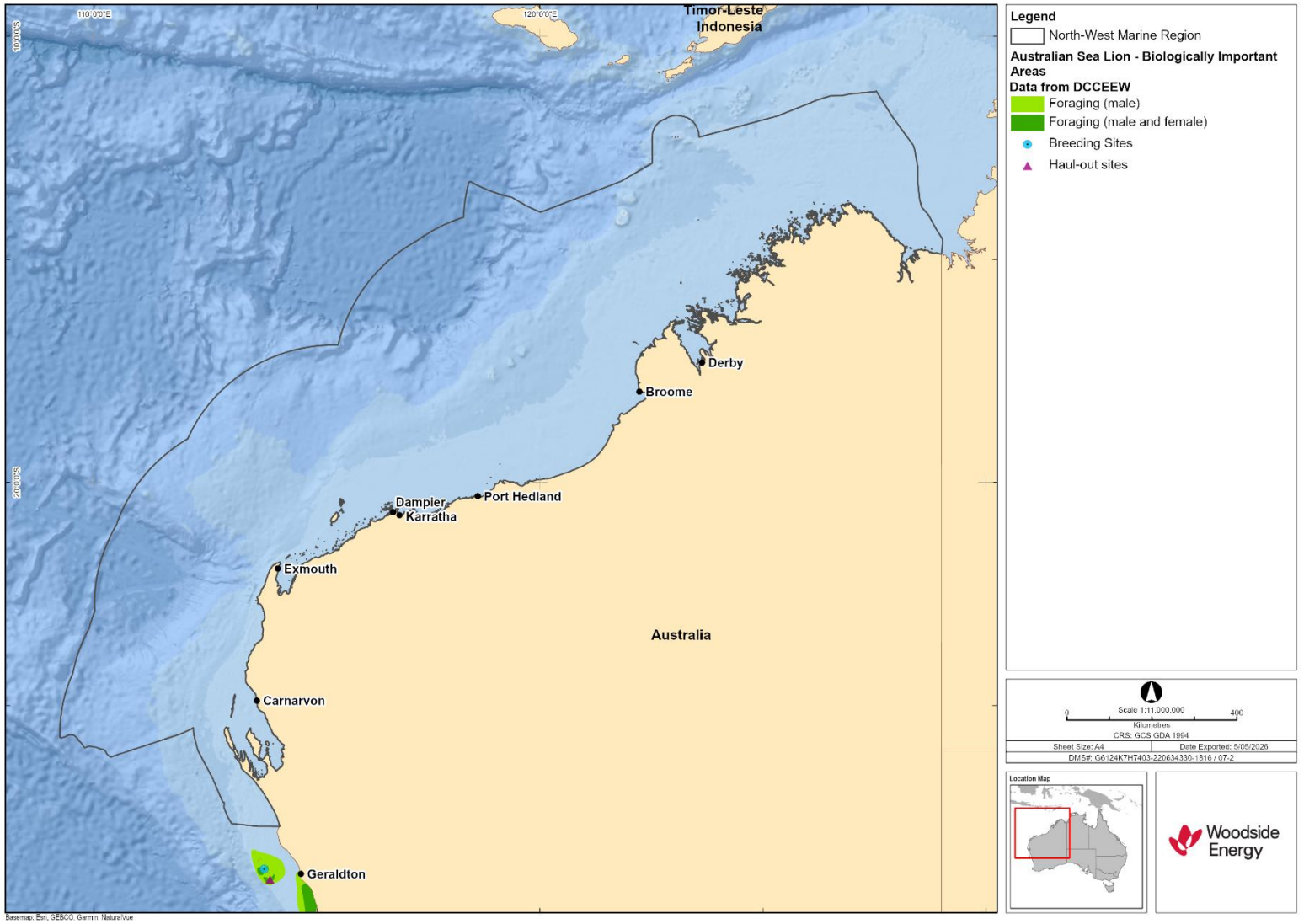


Figure 8-10: Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR

Source: DCCEEW (2024b)

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9. SEABIRDS AND MIGRATORY SHOREBIRDS OF THE NWMR

9.1 Regional context

The NWMR supports high numbers and species diversity of seabirds and migratory shorebirds, including many that are EPBC Act listed as threatened and migratory. The NWMR Marine Bioregional Plan reported 34 seabird species (listed as threatened, migratory or marine) that are known to occur, and 30 of 37 species of migratory shorebird species that regularly occur in Australia, are recorded at Ashmore Reef in the NWMR (DSEWPaC 2012d). The NWMR Marine Bioregional Plan also noted that Roebuck Bay and Eighty Mile Beach are internationally significant and recognised migratory shorebird locations.

A 'Seabird and Shorebird Existing Knowledge and Threats' report was prepared (2022) and updated in 2024 (Worley 2024) to identify key bird species (categorised: pelagic seabirds, nearshore seabirds, shorebirds and others) and their threats in the NWMR (Worley 2024). The high and moderate occurrence species for the NWMR were informed from this report and PMST results. The report identified 92 species.

Each species was assigned to one of three 'frequency of occurrence' levels:

- high – breeding and foraging aggregations known to occur
- moderate – known or likely presence
- low – may occur, or at limits of species range.

Table 9-1 includes those considered key species, with high or moderate occurrence (Worley 2024), and listed threatened or migratory under the EPBC Act, with a total of 63 key species identified within the NWMR, comprising 27 seabirds, 34 shorebirds and two other marine birds.

The PMST report identified a total of nine EPBC Act listed threatened or migratory bird species within the NMR. An additional 15 EPBC Act listed marine bird species that do not have a threatened or migratory status were recorded within the NMR. Appendix A provides a full list.

The PMST report identified a total of 46 EPBC Act listed threatened or migratory bird species within the SWMR. Appendix A provides a full list.

Many migratory seabirds and shorebirds are protected through bilateral agreements between Australia and Japan, China and the Republic of Korea, recognising the migratory route and important stopover and resting habitats of the East Asian–Australasian Flyway (EAAF). Important migratory bird habitats are also recognised as part of protected wetlands of international significance under the Ramsar Convention. Important bird areas for the NWMR, which are also recognised as global key biodiversity areas (KBAs) (BirdLife Australia[13]), include:

- Roebuck Bay KBA (and Ramsar site): internationally significant migratory shorebird species
- Mandora Marsh and Anna Plains KBA (adjacent to Eighty Mile Beach, Ramsar site) – internationally significant migratory shorebird species
- Dampier Saltworks KBA – internationally significant migratory shorebird species
- Montebello Islands KBA – shorebird and seabird species
- Barrow Island KBA – shorebird and seabird species
- Exmouth Gulf Mangroves KBA – internationally significant migratory shorebird species.

Table 9-1 lists the high and moderate occurrence threatened and migratory seabird and shorebird species (as per subject matter expert review (Worley 2024)) that occur within the NWMR, with their conservation/protected status, relevant recovery plans and conservation advice.

[13] https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas [Accessed 19 May 2026]

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Table 9-1: High and moderate occurrence seabird and migratory shorebird species (threatened/migratory/marine) identified by the EPBC Act PMST and NWMR Seabird and Shorebird Existing Knowledge and Threats report as potentially occurring within the NWMR

Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[14]	IUCN Red List (non-statutory)[15]	EPBC Act Part 13 statutory instrument
		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Seabirds							
Diomedea amsterdamensis	Amsterdam albatross	Endangered	Migratory	Marine	Critically Endangered	Endangered	National Recovery Plan for albatrosses and petrels (DCCEEW 2022) EPBC Act Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (Commonwealth of Australia 2018).
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Vulnerable	National Recovery Plan for the Australian Fairy Tern *Sternula nereis nereis* (Commonwealth of Australia 2020b) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Least Concern	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee 2015e) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Least Concern	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee 2015f)
Sternula albifrons	Little tern	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Sternula albifrons* (little tern) (DCCEEW 2025c)

[14] Threatened and Priority Fauna List – July 2025 - https://www.dbca.wa.gov.au/management/threatened-species-and-communities (accessed on 21/05/2026).
[15] IUCN, 2026. The IUCN Red List of Threatened Species. Version 2025-2. https://www.iucnredlist.org (accessed on 21/05/2026).

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[14]	IUCN Red List (non-statutory)[15]	EPBC Act Part 13 statutory instrument
		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Onychoprion fuscatus	Sooty tern	N/A	N/A	N/A	N/A	Least Concern	EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Sula dactylatra	Masked booby	N/A	Migratory	Marine	Migratory	Least Concern	
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (Commonwealth of Australia 2018). EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024) EPBC Act Threat Abatement Plan for predation by the European red fox (DEWHA 2008b) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	Near Threatened	EPBC Act Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations (Commonwealth of Australia 2018). EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024) EPBC Act Threat Abatement Plan for predation by the European red fox (DEWHA 2008b) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[14]	IUCN Red List (non-statutory)[15]	EPBC Act Part 13 statutory instrument
		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Sula leucogaster	Brown booby	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018)
Oceanites oceanicus	Wilson's storm petrel	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024) EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Onychiprion anaethetus (listed as *Sterna anaethetus)*	Bridled tern	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat abatement plan for predation by the European red fox (DEWHA 2008b)
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	N/A
Sula sula	Red-footed booby	N/A	Migratory	Marine	Migratory	Least Concern	N/A
Thalasseus bengalensis	Lesser crested tern	N/A	N/A	Marine	N/A	Least Concern	N/A
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Migratory	Least Concern	N/A
Sterna hirundo	Common tern	N/A	Migratory	Marine	Migratory	Least Concern	N/A

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[14]	IUCN Red List (non-statutory)[15]	EPBC Act Part 13 statutory instrument
		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Puffinus assimilis	Little shearwater	N/A	N/A	N/A	N/A	Least Concern	EPBC Act Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE 2018) EPBC Act Threat Abatement Plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100,000 ha (DEWHA 2009)
Anous stolidus	Common noddy	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024)
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Migratory	Least Concern	
Phaethon rubricauda	Red-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine	Migratory	Least Concern	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Marine	Migratory	Least Concern	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Migratory	Near Threatened	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	Least Concern	
Phaethon lepturus fulvus	Christmas Island white-tailed tropic bird	Endangered	N/A	N/A	N/A	Data Deficient	Conservation Advice for *Phaethon lepturus fulvus* (golden bosun) (DCCEEW 2026f)
Phaethon rubricauda westralis	Red-tailed tropicbird (Indian Ocean)	Endangered	N/A	N/A	N/A	Data Deficient	Conservation Advice for *Phaethon rubricauda westralis* (Indian Ocean red-tailed tropicbird) (DCCEEW 2023h)

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[14]	IUCN Red List (non-statutory)[15]	EPBC Act Part 13 statutory instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	
All seabird species							Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020a) National Light Pollution Guidelines for Wildlife (DCCEEW 2023j)
Migratory shorebirds							
Numenius madagascariensis	Eastern curlew, far eastern curlew	Critically Endangered	Migratory	Marine	Critically Endangered	Endangered	Conservation Advice *Numenius madagascariensis* Far eastern curlew (DCCEW 2023d)
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	Marine	Critically Endangered	Vulnerable	Conservation Advice *Calidris ferruginea* Curlew sandpiper (DCCEEW 2023e)
Limosa lapponica menzbieri	Bar-tailed godwit (menzbieri)	Endangered	Migratory	Marine	Critically Endangered	Near Threatened	Conservation Advice *Limosa lapponica menzbieri* Yakutian bar-tailed godwit (northern Siberia) (DCCEEW 2024c)
Charadrius mongolus	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Endangered	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threated Species Scientific Committee 2016)
Rostratula australis	Australian painted snipe	Endangered	N/A	Marine	Endangered	Endangered	Conservation Advice *Rostratula australis* Australian painted snipe (Threatened Species Scientific Committee 2013b)
Calidris canutus	Red knot	Vulnerable	Migratory	Marine	Endangered	Near Threatened	Conservation Advice *Calidris canutus* Red knot (DCCEEW 2024d)
Calidris tenuirostris	Great knot	Vulnerable	Migratory	Marine	Critically Endangered	Endangered	Conservation Advice *Calidris tenuirostris* Great knot (DCCEEW 2024e)
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Least Concern	Conservation Advice *Charadrius leschenaultia* Greater sand plover (DCCEEW 2023f)
Limosa limosa	Black-tailed godwit	Endangered	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limosa limosa* Black-tailed godwit (DCCEEW 2024f)

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		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Limnodromus semipalmatus	Asian dowitcher	Vulnerable	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Limnodromus semipalmatus* Asian dowitcher (DCCEEW 2024h)
Tringa nebularia	Common greenshank	Endangered	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Tringa nebularia* Common greenshank (DCCEEW 2024g)
Arenaria interpres	Ruddy turnstone	Vulnerable	Migratory	Marine	Migratory	Near Threatened	Conservation Advice for *Arenaria interpres* Ruddy turnstone (DCCEEW 2024i)
Calidris acuminata	Sharp-tailed sandpiper	Vulnerable	Migratory	Marine	Migratory	Vulnerable	Conservation Advice for *Calidris acuminata* Sharp-tailed sandpiper (DCCEEW 2024j)
Xenus cinereus	Terek sandpiper	Vulnerable	Migratory	Marine	Migratory	Least Concern	Conservation Advice for *Xenus cinereus* Terek sandpiper (DCCEEW 2024k)
Pluvialis squatarola	Grey plover	Vulnerable	Migratory	Marine	Migratory	Vulnerable	Conservation Advice for *Pluvialis squatarola* Grey plover (DCCEEW 2024l)
Pluvialis fulva	Pacific golden plover	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by feral cats (DoE 2024)
Calidris ruficollis	Red-necked stint	N/A	Migratory	Marine	Migratory	Near Threatened	
Numenius minutus	Little curlew	N/A	Migratory	Marine	Migratory	Least Concern	EPBC Act Threat Abatement Plan for predation by the European red fox (DEWHA 2008b)
Tringa totanus	Common redshank	N/A	Migratory	Marine	Migratory	Least Concern	N/A
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa stagnatilis	Marsh sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	

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		Threatened status	***Migratory status***	***Listed***	***Conservation status***	***Global status***	
Tringa glareola	Wood sandpiper	N/A	Migratory	Marine	Migratory	Least Concern	
Limicola falcinellus	Broad billed sand piper	N/A	Migratory	Marine	Migratory	Vulnerable	
Limosa lapponica	Bar-tailed godwit	N/A	Migratory	Marine	Migratory	Near Threatened	
Calidris pugnax	Ruff	N/A	Migratory	Marine	Migratory	Least Concern	
Numenius phaeopus	Whimbrel	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris alba	Sanderling	N/A	Migratory	Marine	Migratory	Least Concern	
Calidris subminuta	Long-toed stint	N/A	Migratory	Marine	Migratory	Least Concern	
Gallinago stenura	Pin-tailed snipe	N/A	Migratory	Marine	Migratory	Least Concern	
Gallinago megala	Swinhoe's snipe	N/A	Migratory	Marine	Migratory	Least Concern	
Glareola maldivarum	Oriental pratincole	N/A	Migratory	Marine	Migratory	Least Concern	
Charadrius veredus	Oriental plover	N/A	Migratory	Marine	Migratory	Least Concern	
Tringa brevipes	Grey-tailed tattler	N/A	Migratory	Marine	Migratory and Priority species	Near Threatened	
All migratory shorebird species							Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia 2015c) EPBC Act Policy Statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) National Light Pollution Guidelines for Wildlife (DCCEEW 2023j)

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Species name	Common name	EPBC Act (Commonwealth) (as per PMST report Appendix A)			BC Act (WA)[14]	IUCN Red List (non-statutory)[15]	EPBC Act Part 13 statutory instrument
		Threatened status	*Migratory status*	*Listed*	*Conservation status*	*Global status*	
Other marine birds							
Apus pacificus	Fork-tailed swift	N/A	Migratory	Marine	N/A	Least Concern	None
Pandion haliaetus	Osprey	N/A	Migratory	Marine	N/A	Least Concern	None

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9.2 Seabirds in the NWMR

Seabirds are birds that are adapted to life within the marine environment (oceanic and coastal). They are generally long-lived, have delayed breeding and have fewer young than other bird species (Commonwealth of Australia 2020a).

At least 27 key seabird species (high and moderate occurrence as per Worley (2024), or listed as threatened or migratory under the EPBC Act as identified in the PMST reports in Appendix A) are known to occur in the NWMR. These include various species of terns, noddies, petrels, shearwaters, frigatebirds and boobies.

Seabird species can be grouped into pelagic and nearshore seabirds, based on life cycle behaviour, distributions and key habitats (Worley 2024). Pelagic species spend most of their life at sea, ranging over large distances to forage. These pelagic species only come onshore to breed and raise chicks at natal or high-fidelity breeding colonies. These colonies are often on remote, offshore island locations in and adjacent to the NWMR. Many species are ecologically significant to the NWMR as they are endemic to the region, can be present in large numbers in breeding seasons and non-breeding seasons, and many exhibit extensive annual migrations that include marine areas outside the Australian EEZ (DSEWPaC 2012d). Nearshore seabirds are confined to nearshore areas (unless migrating), have shorter foraging trips during breeding, and may rest on land or shoreline habitats outside of breeding periods (Worley 2024).

The presence of seabirds within the NWMR is influenced by seabird species that migrate and forage in the area during the non-breeding season, including many seabird species that breed on the Houtman Abrolhos Islands in the SWMR. Pelagic seabirds have been documented foraging at current boundaries and seasonal upwellings within the NWMR (Sutton *et al*. 2019). The Houtman Abrolhos Islands National Park in the SWMR is one of the most significant seabird breeding locations in the eastern Indian Ocean. Sixteen species of seabirds breed there; 80% of common (brown) noddies, 40% of sooty terns and all the lesser noddies found in Australia nest at the Houtman Abrolhos (Surman 2019). Important seabird areas in the NWMR are as identified by the KBAs (see Section 9.1), EPBC Act Bioregional BIAs and subject matter expert review, as presented in Worley (2024).

9.2.1 High-occurrence key seabird species

Species descriptions for high occurrence key seabird species are provided in the next subsections. High occurrence seabird species were defined as those with breeding and foraging aggregations known to occur within the NWMR (Worley 2024).

9.2.1.1 Australian fairy tern (nearshore seabird)

The Australian fairy tern (*Sternula nereis nereis*) is listed as vulnerable under the EPBC Act. The WA breeding population (about 5,000 to 6,000 mature individuals) is dispersed over about 2,500 km of coastline (Greenwell 2021). Within WA, the subspecies comprises a sedentary Pilbara population and a partially migratory population extending from Exmouth to Point Malcolm. Individuals of the partially migratory population may occasionally migrate into the southern region of the NWMR during winter months.

Within the NWMR breeding occurs in small colonies between June and September on offshore islands, including Simpson Island, Barrow Island, the Montebello Islands, the Lowendal Islands, Thevenard Island, Serrurier Island, the islands in the Dampier Archipelago, Maryanne Shoals and Egret Island (Dunlop 2018; Johnstone *et al*. 2013; Surman pers obs.). Colonies tend to occupy areas rather than fixed sites, and nest sites can be abandoned after one or more years, even if they have been successful (Saunders and de Rebeira 1985).

While information regarding foraging ecology of this species within the NWMR is lacking, the Australian fairy tern has been studied in SA. Here, the species typically forages in inshore waters and has been reported to rarely travel beyond 2 km during the breeding season in SA (Paton and Rogers 2009).

Australian fairy terns are diurnal plunge diving seabirds, feeding exclusively on small (<60 mm) surface-schooling bait fishes throughout their range. Prey includes species of sprats, hardy heads and larval prey of some demersal fish species. Unlike many other terns, fairy terns do not depend on large pelagic fishes to drive their prey to the surface.

Breeding BIAs are identified for the fairy tern in the NWMR, as presented in Figure 9-1.

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9.2.1.2 Australian lesser noddy (pelagic seabird)

The Australian lesser noddy (*Anous tenuirostris melanops*), which is endemic to Australia, is listed as vulnerable under the EBPC Act and endangered under the BC Act. The largest breeding colonies are found on the Houtman Abrolhos Islands, with fewer records of breeding on Ashmore Reef (Clark *et al.* 2011; Cannell and Surman 2021). Possible colonisation of Cocos (Keeling) Island is reported, but it is unconfirmed if this is the Australian subspecies (Stokes and Hinchey 1990).

At the Houtman Abrolhos Islands, the breeding population has been estimated at about 50,000 breeding pairs (Surman *et al.* 2016). At this location, studies indicate breeding is not highly synchronised; the single egg clutches were laid over a 102-day period from late August to early December, peaking in September (Surman and Wooller 1995). The incubation period averaged 34 days and the fledging period 40 days (Surman and Wooller 1995).

Studies of foraging ecology of breeding Australian lesser noddies at the Houtman Abrolhos Islands found they are largely diurnal, foraging between 4 am and 8:40 pm and returning to their colony at night (Surman *et al.* 2017). From this study, the global positioning system tracks of 17 adults during incubation or chick provisioning revealed most foraging trips lasted between two and four hours with a total trip distance of less than 40 km. However, some trips lasted up to 16 hours covering distances of up to 112 km (Surman *et al.* 2017). During non-breeding, birds appear to remain near the breeding islands year-round (Higgins and Davies 1996).

Due to differences in climate and seasonality experienced at the Houtman Abrolhos Islands and Ashmore Reef, timing of breeding differs. The Ashmore Reef population has been recorded breeding in the Austral autumn/winter (Clarke and Herrod 2016), while the Houtman Abrolhos Islands population breeds during the Austral spring/summer (Surman and Wooller 1995).

No BIAs for the Australian lesser noddy overlap the NWMR and tracking data suggest individuals breeding at the Houtman Abrolhos Islands foraged predominantly in a south-westerly direction, remaining within waters of the SWMR (Surman *et al.* 2017). Several individuals were observed roosting with common noddies on Bernier Island, near Carnarvon in 2022 (Nicholson pers obs.). However, it is unlikely waters of the NWMR provide significant habitat for individuals breeding at the Houtman Abrolhos Islands. The small population of this subspecies breeding on Ashmore Reef may show similar foraging ecology during breeding and remain in the vicinity of the islands, using habitats of the NWMR.

9.2.1.3 Bridled tern (pelagic seabird)

The bridled tern (*Onychiprion anaethetus*, listed as *Sterna anaethetus*) is listed as migratory under the EPBC Act and BC Act. It is a common summer breeding visitor to the NWMR between September and April, especially around Dampier Archipelago and the Montebello Islands (Johnstone *et al.* 2013). Breeding has also been reported on the Lowendal Islands (Nicholson 2002), Passage Islands and islands off Onslow from November to March (Johnstone *et al.* 2013). Small breeding populations have also been recorded on East Island at Ashmore Reef between April and November and the Lacapede Islands (Clarke and Herrod 2016; Johnstone and Storr 1998).

The migration and local movements of breeding birds within the NWMR are poorly defined; two individuals were tracked departing the Houtman Abrolhos islands in April/May, transiting along the continental shelf waters before departing Australian waters and migrating towards the Western Celebes Sea, east of Borneo (Surman *et al.* 2018). These individuals departed the Western Celebes Sea in August/September, returning to the Houtman Abrolhos islands around 14 days later (Surman *et al.* 2018). This species has been regularly recorded on the continental shelf up to 70 km away from breeding locations during oceanic surveys (Surman and Nicholson 2011; Dunlop *et al.* 2001).

Bridled terns feed diurnally on a range of species of fish, crustaceans, cephalopods and insects. In Australia, they feed almost entirely on fish, though they also take crustaceans and aquatic insects. They often feed on schools of fish forced to the surface by other predators (Dunlop 1997). Bridled terns forage mainly by contact dipping, with birds hovering or gliding near the surface of the sea and swooping down and immersing only the head and breast when attacking prey, which are usually taken from the top few centimetres of the sea surface (<20 cm) (Dunlop 1997).

During breeding at Penguin Island, WA, individuals foraged most commonly between 20 km and 40 km from the nearest breeding colony, though some were observed at distances up to 80 km (Dunlop 1997). This species has also been recorded within 70 km of its breeding colonies within the NWMR, on outer continental shelf waters (Nicholson 2002; Dunlop *et al.* 2001).

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Although foraging may be concentrated around breeding colonies during the breeding season, no BIAs in the NWMR have been identified for this species.

9.2.1.4 Brown booby (pelagic seabird)

The brown booby (*Sula leucogaster*) is listed as migratory under the EPBC Act and BC Act. It is a cosmopolitan species with a pan-tropical distribution. Within the NWMR, large colonies occur at offshore islands, including the Lacepede Islands (17,000 pairs, Mustoe and Edmunds 2008), Ashmore Reef (5,000 pairs at Middle Island and 3,000 pairs at East Island in 2007, Swann 2005a; Swann 2005b; Swann 2005c; Milton 2005; Clarke 2010), Bedout Island (1,000 pairs) and Adele Island (7,500 pairs, Burbidge *et al*. 1987). Small colonies of up to ten pairs have been recorded at Overhanging Rock, within the Lowendal Islands (Nicholson pers obs.). The total breeding population in the Australian region in 1996–97 was estimated at 59,940 to 73,900 pairs (WBM Oceanics and Claridge 1997).

Brown boobies do not migrate far from their breeding islands, rarely dispersing more than 240 km from their natal colony (Dunlop *et al.* 2001). Brown boobies forage within 50 km of their colony where they plunge dive, reaching up to 15 m depth and pursuing their prey when ascending after the dive (Austin *et al.* 2021). Brown booby diet is principally medium to large surface schooling prey (northern pilchard, Indian anchovy, flying fish and cephalopods), often associated with feeding tunas and mackerels (Cannell *et al.* 2022; Austin *et al.* 2021).

Brown boobies are not prone to waterlogging and will roost on the sea surface, and are known to form large aggregations on oil and gas platforms throughout the NWMR (Surman pers obs.), including Woodside facilities, indicating wider distribution of non-breeding individuals across the NWMR.

Breeding BIAs for the brown booby in the NWMR are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (Figure 9-2). Breeding is reported as occurring between January and March, but this becomes protracted through to October at Ashmore Reef (Clarke *et al.* 2016). Brown boobies are resident in the NWMR throughout the year, although they may forage long distances over the open ocean (Surman and Nicholson 2011).

9.2.1.5 Caspian tern (nearshore seabird)

The Caspian tern (*Hydroprogne caspia*) is listed as migratory under the EPBC Act and BC Act. It is moderately common across coastlines of the NWMR and offshore islands (Johnstone *et al.* 2013).

Breeding occurs as solitary nests or in colonies of up to 52 breeding pairs, mainly on islands, including North Turtle Island, Dampier Archipelago including Enderby Island, and Frazer Island, and occasionally on mainland coasts, such as Cape Preston and North West Cape, from late March to early November (Johnstone *et al.* 2013).

During breeding, adults can forage up to 60 km from the colony to catch fish and meet their elevated energetic requirements at this time (Burger *et al.* 1996; Balance *et al.* 2008). The Caspian tern is a diurnal forager, with the length and frequency of foraging trips, as well as relative time spent foraging or attending chicks, changing with food resource availability (Dunlop and McNeill 2017).

Caspian terns usually forage in shallow, sheltered waters by plunge-diving for various prey species (Serventy *et al.* 1971).

Although foraging BIAs occur in the SWMR, no BIAs for this species have been identified in the NWMR.

9.2.1.6 Common noddy (pelagic seabird)

The common (or brown) noddy (*Anous stolidus*) is listed as migratory under the EPBC Act and BC Act. The species is widespread in tropical and subtropical areas within and beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting.

The Houtman Abrolhos is the primary breeding habitat for the common noddy in the eastern Indian Ocean, although breeding occurs across offshore islands of the NWMR, albeit in fewer numbers, including Bedout Island, Montebello Islands and Frazer Island (Johnstone *et al.* 2013), and Ashmore Reef (Clark and Herrod 2016). Breeding at Ashmore Reef has been recorded as occurring between April and November (Clark and Herrod 2016).

During breeding, individuals nesting on Lancelin Island in the SWMR were found to forage diurnally (Shephard *et al.* 2018). Tracked individuals travelled an average of 97 km from the colony, with an average

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round-trip distance of 141 km, with significantly longer trips during chick rearing compared to incubation (Shephard *et al.* 2018).

The species is highly pelagic outside breeding (March to August), with breeding individuals of the Houtman Abrolhos Islands travelling about 950 km north to the NWMR (Surman *et al.* 2017). The species is often reported roosting on uncrewed oil and gas platforms within the NWS and Timor Sea (Surman pers obs. 2021).

Although widespread across the NWMR during breeding and non-breeding, no BIAs for this species are in the NWMR.

9.2.1.7 Frigate birds (pelagic seabirds)

The lesser (*Fregata ariel*) and great frigatebirds (*Fregata minor*) are both listed as migratory under the EBPC Act and BC Act. They are the most widely distributed of the frigatebirds, with a pan-tropical distribution.

In the NWMR the great frigatebird nests at Ashmore Reef and Adele Island. At Ashmore Reef they are found to breed year-round (Clark and Herrod 2016). In addition to Ashmore Reef and Adele Island, the lesser frigatebird also nests at Cartier Island, the Lacepede Islands and Bedout Island, which is thought to support more than 1% of the world's breeding population (BirdLife International 2021). On Ashmore Reef the species breeds in the Austral winter (Clark and Herrod 2016).

Great frigatebirds breeding in the South China Sea on average foraged 75 km (maximum 150 km) from their breeding colony and lesser frigatebirds 123 km (maximum 300 km) (Mott *et al.* 2017).

Outside of breeding, frigatebirds may disperse significant distances from their breeding colonies (Mott *et al.* 2017). Great frigatebirds are wide ranging, being recorded between 900 and 1,400 km from their natal colonies (Dunlop *et al.* 2001). Tracking studies of non-breeding lesser and great frigatebirds roosting on Ashmore Reef and Adele Island demonstrated that individuals have large distributions, including Australian coastal waters and the South China, Java and Sulu Seas and the Gulf of Thailand (Mott *et al.* 2021). During the wet season particularly, Australian waters provided optimal habitat for non-breeding individuals of both species (Mott *et al.* 2021).

Both frigatebirds forage by snatching prey from the surface waters, or when prey break the surface. They also rely heavily upon kleptoparasitism, harrying other seabirds returning to their colonies with food until it is regurgitated. Frigatebirds are susceptible to waterlogging, so do not plunge or splash dive for prey nor do they roost on the seas surface. Across the NWMR they forage on flying fish, cephalopods, anchovies, northern pilchards and other medium sized prey (8 to 30 cm, Surman pers obs.).

Breeding BIAs for the great frigatebird in the NWMR are associated with breeding colonies on Ashmore Reef and Adele Island (Figure 9-3). For the lesser frigatebird, breeding BIAs are associated with breeding colonies on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island (Figure 9-4).

9.2.1.8 Greater crested tern (nearshore seabird)

The greater crested tern (*Thalasseus bergii*) is listed as migratory under the EPBC Act and BC Act. The species is widespread along coastlines of the NWMR and offshore islands (Johnstone *et al.* 2013).

Many populations remain sedentary in their breeding areas or disperse locally (del Hoyo *et al*. 1996), although some are more migratory (Urban *et al*. 1986). The species breeds in large, dense colonies, or in small groups of fewer than ten pairs amid colonies of other species, such as silver gull (del Hoyo *et al.* 1996). Colonies are on islands, including those as far offshore as Bedout, Legendre and the Montebello and Lowendal islands (Johnstone *et al.* 2013). Adult breeders have shown both high site fidelity and flexibility in their breeding localities, depending upon the spatial and temporal reliability of food resources (Crawford *et al.* 2002).

Breeding occurs from late March to May (Johnstone *et al.* 2013). During breeding, greater crested terns conduct short, diurnal foraging trips near (<40 km) the colony (Surman and Wooller 2003; Rock *et al.* 2007; McLeay *et al.* 2010), with most foraging behaviour displayed by individuals at distances >5 km (McLeay *et al.* 2010). Further, crested terns require limited nesting material, thus forage near breeding sites for such materials (Surman *et al.* 2025).

The chicks are predominantly fed pelagic fish, a diet that varies among colonies and years (Chiaradia *et al.* 2002; McLeay *et al.* 2009). Adults may forage more widely on inshore reef fish (Surman and Wooller 2003), crustaceans and cephalopods using a plunge diving method (Commonwealth of Australia 2020a).

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Although there is known habitat use in the NWMR, there are no designated BIAs for the greater crested tern in the NWMR.

9.2.1.9 Lesser crested tern (nearshore seabird)

The lesser crested tern (*Thalasseus bengalensis*) is listed as marine under the EPBC Act and is known to breed on islands in the NWMR. This species inhabits sandy and coral coasts and estuaries and breeds on low-lying offshore islands. It forages for small pelagic fish and shrimps in the surf and offshore waters Commonwealth of Australia 2020.

This species has been recorded nesting regularly at the Lowendal Islands, with up to 200 pairs recorded among larger colonies of crested terns. The lesser crested tern has also been recorded nesting on Stena Island in the Kimberley region, Bedout Island in the Pilbara region, and may nest at the Montebello Islands. There are also breeding records for Ashmore Reef and Low Rocks and Adele Islands in the Kimberley (DSEWPaC 2012d).

Breeding BIAs across the NWMR are associated with known breeding colonies on islands (Figure 9-5).

9.2.1.10 Little shearwater (pelagic seabird)

The little shearwater (*Puffinus assimilis*) is listed as marine under the EPBC Act. This bird is typically sedentary and recluse and prefers feeding further offshore than similar birds. Breeding occurs in islands off southern WA, between Recherche Archipelago and the Houtman Abrolhos group. During the Australian summer, the little shearwater nests on grassy slopes and forests in self-excavated burrows or rock crevices among boulders (Kirwan *et al.* 2020).

A foraging BIA for this species is in the southern extent of the NWMR (Figure 9-6).

9.2.1.11 Little tern (nearshore seabird)

The little tern (*Sternula albifrons*) is listed as migratory under the EPBC Act and BC Act. There are three subpopulations of little tern in Australia and two of these are in the NWMR – the northern Australian breeding subpopulation occurring around Broome and extending across the NWMR to Cape York, and an east Asian breeding subpopulation, with the terns present from Shark Bay to south-eastern Queensland during the Austral summer.

Recent surveys have found little terns breed across the NWMR in small colonies (Surman pers obs.). However, identification between subpopulations is difficult, and population estimates have high error due to the overlapping range and remote breeding sites of the northern populations. A southwards movement of breeding distribution has been noted at three key locations: Lowendal Islands (Surman pers comm.), Burrup Peninsula (Nicholson pers comm.) and North West Cape (Greenwell and Dunlop 2021). Little terns usually forage near their breeding colonies, typically within 5 km (Bertolero *et al.* 2005) mainly on small fish (<10 cm in length), but they also eat crustaceans, insects, annelids and molluscs.

Little is known about the breeding and foraging ecology of little terns, but BIAs for foraging and resting have been identified across the NWMR (Figure 9-7), with a peak in breeding activity between June and October.

9.2.1.12 Masked booby (pelagic seabird)

The masked booby (*Sula dactylatra*) is listed as migratory under the EBPC Act. Within the NWMR, the subspecies *Sula dactylatra bedouti* ranges from the Dampier Archipelago, along the entire coast into the NMR and across to Queensland (Merchant and Higgins 1990). Individuals have also been recorded at Barrow Island.

Within the NWMR, Bedout and Adele islands represent the main breeding locations, with 400 and 320 breeding pairs estimated at each, respectively (Marchant and Higgins 1990; Swann *et al.* 2002). Breeding is also reported at the Ashmore Reef group, with up to 30 breeding pairs recorded on Middle Island and 15 pairs on East Island (Burbidge and Fuller 1996; Hassell *et al.* 2003; Swann 2005a; Swann, 2005b; Swann 2005c; Milton, 2005; Clarke 2010; Clarke *et al.* 2016). Up to two pairs have also been recorded breeding in the Lacepede group (Hassell *et al.* 2003).

A recent study of individuals from Bedout Island indicated low genetic exchanges (mitochondrial genes) with other masked booby colonies currently studied, suggesting a dependence on local recruitment for population persistence (Kingsley *et al.* 2019). Further, the low exchange of mitochondrial genes may reflect high breeding site fidelity and limited foraging distances during the breeding season. Due to the concentration in a

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relatively small number of areas to breed, any catastrophe at these sites (such as oil spills, or disturbance and vandalism of nests) could have a substantial impact on the population (Birds Australia 2005).

Studies of foraging behaviour of individuals breeding within the NWMR are lacking, but studies at other locations indicate foraging is diurnal and ranges vary between 100 and 200 km of the breeding colony (Weimerskirch *et al.* 2008).

There are no BIAs for this species in the NWMR.

9.2.1.13 Red-footed booby (pelagic seabird)

The red-footed booby (*Sula sula*) is listed as migratory under the EPBC Act and BC Act. Compared to brown boobies, the red-footed booby occurs in fewer numbers across the NWMR. Within the NWMR they breed at Ashmore Reef (up to 100 pairs, Clarke and Herrod 2016) and Adele Island (14 pairs, Botle et al. 2004). At Ashmore Reef they have been recorded breeding year round (Clarke and Herrod 2016).

The red-footed booby is one of the most widely distributed of the boobies across oceanic waters in the tropical Indian Ocean; during non-breeding, individuals have been observed up to 800 km from their natal colony (Dunlop *et al.* 2001). However, individuals are limited to a range of 150 km from the breeding colony when breeding (Wiemerskirsch et al. 2005). In the Ashmore area, adults have been detected up to 125 km from the nearest breeding islands during October (unpubl. data, referenced in Clarke and Herrod 2016).

Red-footed boobies are diurnal foragers, plunge diving for flying fishes (predominantly) across their range (Commonwealth of Australia 2020a). Breeding BIAs for the red-footed booby are associated with breeding colonies at Ashmore Reef and Adele Island (Figure 9-8).

9.2.1.14 Red-tailed tropicbird (pelagic seabird)

The red-tailed tropic bird is listed as endangered (since December 2023) under the EPBC Act and 'Priority 4' under the BC Act.

Across the NWMR, the largest population breeds on Christmas Island (1,400 to 2,000 pairs, references within Sommerfeld *et al.* 2015) with additional key breeding locations on Cocos (Keeling) group and islands of Ashmore Reef Marine Park (17 to 24 breeding pairs, Clarke *et al.* 2011; Clarke and Herrod 2016). At Ashmore Reef, breeding pairs were observed year-round, with no discernible peak in breeding activity (Clarke *et al.* 2011). The species nests on islands, stacks, atolls, cays or coastal cliffs (DCCEEW 2023h).

The red-tailed tropicbird is a shallow diving species typically foraging diurnally within the first 4 m of the water column (LeCorre 1997). There is limited information about foraging range when breeding in Australia, but observations at sea in the Ashmore Reef region demonstrate they can forage considerable distances from land (unpubl. data, Clarke 2010). This corroborates data from elsewhere in their global range, which reported foraging distances of 240 km during incubation, 109 km during chick rearing and maximum distances of 380 km (Fayat *et al.* 2023). This species has been observed during boat surveys of the outer shelf of the NWMR year round (Surman and Nicholson 2011).

There are no BIAs for this species within the NWMR.

9.2.1.15 Roseate tern (nearshore seabird)

The roseate tern (*Sterna dougallii*) is listed as migratory under the EPBC Act and BC Act. This species is generally subtropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands.

The largest roseate tern breeding colony in WA is in the Houtman Abrolhos Islands (Surman and Nicholson 2009), with roseate terns requiring limited nesting material, thus foraging near breeding sites for nesting materials (Surman *et al.* 2025). Large colonies breed within the Lowendal Islands and Montebello Islands region where there is a stronghold for this species (Higgins and Davies 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins and Davies 1996). Peak breeding times across the NWMR are between May and August.

Birds are known to usually move away from breeding colonies after breeding, but their non-breeding range is not well defined (Higgins and Davies 1996). Many non-breeding roseate terns have been observed at several remote locations in the Kimberley, high numbers are also recorded at the Eighty Mile Beach Ramsar site (Surman pers obs.).

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Roseate terns will forage diurnally, up to 60 km from their colonies and always over deeper shelf waters rather than shallow coastal areas (Surman and Wooller 2003). Roseate terns will also readily raft (roost in flocks on the sea surface) after foraging episodes (Commonwealth of Australia 2020).

Roseate terns predominantly eat small pelagic fish taken by plunge diving or surface dipping, typically foraging in dense flocks overflying predatory fishes that push their prey to the surface. Roseate terns may plunge to 20 cm depth.

Breeding BIAs across the NWMR are associated with known breeding colonies on islands, while a resting BIA encompasses Eighty Mile Beach (Figure 9-9).

9.2.1.16 Sooty tern (nearshore seabird)

The sooty tern (*Onychoprion fuscatus*) inhabits tropical and subtropical oceans around the world and nests on remote islands that have limited human interaction. This species lives on the wing and remains airborne for years at a time between fledging and its first breeding, never returning to land during the nonbreeding seasons nor observed resting on the water. Sooty tern breeding colonies are dense, with pairs generally nesting on the ground in sandy substrate or sparse vegetation. In contrast to most terns who feed by plunge diving, the sooty tern forages by 'dipping' or merely brushing the surface of the water or by snatching small fish in midair as they escape from predators (Schreiber *et al.* 2020).

The sooty tern has a foraging BIA overlapping the southern extent of the NWMR (Figure 9-10).

9.2.1.17 Wedge-tailed shearwater (pelagic seabird)

The wedge-tailed shearwater (*Ardenna pacifica*) is listed as migratory under the EPBC Act and BC Act. It is a pelagic, marine seabird known from tropical and subtropical waters. Its distribution is widespread across the Indian and Pacific oceans, with a global population of 2.6 million pairs. Of this, about one million pairs breed in Australia, most of which do so on islands in WA between Rottnest Island in the south to Ashmore Reef in the north. The largest breeding populations are at the Houtman Abrolhos (600,000 pairs – Surman and Nicholson 2009), and throughout the NWS region of the NWMR, where large populations exist on Muiron Islands (300,000 pairs) and Serrurier Island (60,000 pairs) (Surman and Nicholson 2009; 2015).

Adults are absent from their breeding colonies during the interbreeding period and return from their tropical Indian Ocean overwintering grounds from late-June onwards to re-excavate their burrows. This species is highly synchronous in timing of breeding; all eggs within a colony are laid within a ten-day period. They lay their single egg during early-November, which is then incubated until the chick hatches (after 53 days) in early-January. Once hatched, adults leave the burrows to forage locally during the day, returning at night to feed chicks until they are ready to fledge (Nicholson 2002). Due to the high synchronicity in egg laying, fledging is restricted to the first two weeks of April (Nicholson 2002).

Breeding behaviours are nocturnal in wedge-tailed shearwaters. Adults return to and depart the colony at night and fledglings depart the colony at night. In the lead-up to fledging, chicks also leave their burrows to exercise their wings. Adults may not return to feed chicks each night; wedge-tailed shearwaters breeding on Muiron Island (north) undertook extensive foraging trips during the incubation period (1,200 to 1,400 km) and shorter trips during chick rearing (<300 km, Cannell *et al.* 2019). Longer foraging trips took individuals in a north-west direction offshore towards oceanic seamounts. Conversely, the shorter trips tended to include waters to the west and north-west of the Muiron Islands (Cannell *et al.* 2019). In addition to the Muiron Islands, this dual foraging strategy, whereby parents alternate or mix short and long trips, have been recorded in wedge-tailed shearwaters breeding at Heron Island in Queensland, Lord Howe Island in Tasmania (Peck and Congdon 2005), and New Caledonia (Weimerskirch *et al.* 2020). However, divergent foraging strategies have been detected between colonies, which is linked to the proximity of colonies to high-productivity waters (Peck and Congdon 2005; Weimerskirch *et al.* 2020).

While the presence of squid and lanternfish in their diet (Surman and Nicholson 2009) suggests nocturnal foraging occurs in this species, global positioning system tracking studies found foraging activities at sea were more frequent during the day compared with at night (Weimerskirch *et al.* 2020; Catry *et al.* 2009). During the day, resting periods on the sea surface were short whereas at night individuals spent a large proportion of their time resting at the surface (Weimerskirch *et al.* 2020). Other prey species include schooling bait fishes and cephalopods, often feeding in association with other pelagic seabird species such as sooty terns and common noddies, and pelagic fishes such as tunas and mackerels. Diet composition is likely to vary between colonies, depending upon the prey available, and thus determining both the foraging strategy, as described above, and the division of nocturnal and diurnal foraging. Wedge-tailed shearwaters

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dive between 3 and 66 m, actively pursuing prey by feeding at the surface or by actively swimming below bait schools.

Post-breeding, wedge-tailed shearwaters breeding on the Houtman Abrolhos Islands and Varanus Island migrated 4,500 km north-west to equatorial waters of the Indian Ocean around 90°E (Surman *et al.* 2018), traversing the NWMR, and those from the Great Barrier Reef migrated to the northern hemisphere, about 6,000 km northwards to Micronesia (McDuie and Congdon 2016).

Wedge-tailed shearwaters are observed during breeding across all shelf waters and are the most frequently encountered seabird at sea. Large numbers of wedge-tailed shearwaters have been observed foraging off the NWS between May and August (Surman pers obs.).

Breeding BIAs are located for the wedge-tailed shearwater across the NWMR (Figure 9-11). It is noted both breeding and foraging BIAs represent foraging habitat used by adult (chick-rearing) wedge-tailed shearwaters during the breeding season.

9.2.1.18 White-tailed tropicbird (pelagic seabird)

The white-tailed tropicbird (*Phaethon lepturus*) is listed as migratory under the EPBC Act and BC Act. The species breeds across many sites, but in low numbers (Commonwealth of Australia 2020). In Australia, between 6,000 and 12,000 pairs nest on Christmas Island, with smaller fragmented populations at North Keeling Island (40 pairs). These individuals are expected to be members of the Christmas Island white-tailed tropicbird subspecies *Phaethon lepturus fulvus*. While individuals of this subspecies can forage at great distances from colonies (see below), the numbers occurring in the NWMR are expected to be low.

In the NWMR, the white-tailed tropicbird is known to nest on Ashmore Reef and the Rowley Shoals (ten breeding pairs and up to three nesting pairs; Clark 2010; Burbidge *et al.* 1996, respectively). Breeding can occur year round (Clarke and Herrod 2016).

Pennycuick *et al.* (1990) demonstrated that the white-tailed tropicbirds breeding in Puerto Rico foraged up to 89 km from the nest site when breeding and moved considerably larger distances when not breeding. Dunlop *et al.* (2001) observed birds from Christmas Island foraging singly between 1,400 and 1,600 km south-east of Christmas Island.

This species regularly roosts on the sea surface between bouts of foraging. It is a solitary forager, rarely feeding in association with other seabird species and always in waters favourable for its principal prey, flying fish (Santos *et al.* 2018). The species is a surface forager that occasionally undertakes shallow dives (Marchant and Higgins 1990).

There are breeding BIAs associated with nesting occurring at the Rowley Shoals and Ashmore Reef within the NWMR (Figure 9-12).

9.2.2 Moderate-occurrence key seabird species

Table 9-2 summarises descriptions for moderate occurrence key pelagic and nearshore seabird species.

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Table 9-2: Species summary for moderate occurrence pelagic and nearshore seabird species within the NWMR

Species	NWMR presence	Predominant feeding behaviour	Diet
Amsterdam albatross	Year-round low-density presence associated with foraging breeding and non-breeding individuals	Diurnal and nocturnal Dipping, surface-seizing, diving to depths ≥2 m	Squid, fish and crustaceans
Flesh-footed shearwater	Non-breeding, migration: Jun to Aug	Diurnal and nocturnal Pursuit-plunging, surface-seizing	Fish, cephalopods
Soft-plumaged petrel	Non-breeding, migration: Jan to Jun	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Streaked shearwater	Non-breeding: Dec to Apr	Diurnal and nocturnal Surface-seizing	Fish, squid, crustacean
Wilson's storm petrel	Non-breeding: Jun to Dec	Diurnal and nocturnal Dipping, surface-seizing	Crustaceans, fish
Common tern	Non-breeding: Aug to Mar	Diurnal Surface-plunging, dipping	Fish
Christmas Island white-tailed tropicbird	Year-round low-density presence associated with foraging breeding and non-breeding individuals	Diurnal Surface-plunging, dipping; aerial foraging over open ocean	Fish, squid, crustaceans

9.2.3 Biologically important areas for seabirds

A review of the Australian Marine Spatial Information System (Geoscience Australia 2026) identified BIAs representing important life cycle stages and behaviours for nine species of seabird in the NWMR. These are presented in Table 9-3.

The NWMR is important for multiple oceangoing and nearshore seabird species, as described in the preceding sections. DCCEEW is actively updating BIAs, with revisions to the datasets occurring in June 2024, January 2025 and December 2025 (DCCEEW 2025b) for a range of these seabird species. These BIA revisions have removed all foraging BIAs for seabirds throughout the NWMR. It is noted many of the listed seabird species do forage in the region. Refer to the detailed species descriptions, particularly with note to the pelagic (oceangoing) wedge-tailed shearwater (Section 9.2.1.1) and nearshore, residential tern species that have foraging BIAs listed in the SWMR (Section 9.2.1.1).

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Table 9-3: Seabird BIAs within the NWMR

Seabird species	Woodside activity area			BIAs		
	Browse	***NWS/ Scarborough***	***North West Cape***	***Foraging***	***Breeding***	***Resting***
Australia fairy tern	-	✓	✓	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is in the SWMR, including the Houtman Abrolhos Islands	Pilbara and Gascoyne coasts and islands, including Dampier Archipelago, Montebello, Lowendal and Barrow island groups, south Ningaloo and Bernier Island of Shark Bay	-
Brown booby	✓	✓	-	-	Kimberley and northern Pilbara coasts and islands, including Ashmore Reef, Eighty Mile Beach, Lacepedes, Adele Island and North Kimberley	-
Greater frigatebird	✓	-	-	-	Kimberley coast, including Ashmore Reef and Adele Island	-
Lesser frigatebird	✓	✓	-	-	Kimberley and northern Pilbara coasts and islands, including Ashmore Reef, Eighty Mile Beach, Lacepedes and Adele Island	-
Lesser crested tern	✓	✓	✓	-	Islands off the north and west Kimberley, and Bedout Island, Lowendal Islands, Thevenard Island and island off Dirk Hartog	-
Little shearwater	-	-	✓	From Kalbarri to Eucla, including offshore waters	-	-
Little tern	✓	✓	-	-	Kimberley and northern Pilbara coasts and islands, including Ashmore Reef, Scott Reef, Roebuck Bay, Rowley Shoals and Adele Island	Adele Island, Ashmore Reef, Scott Reef and Roebuck Bay
Red-footed booby	✓	-	-	-	Ashmore Reef and Adele Island	-

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Seabird species	Woodside activity area			BIAs		
	Browse	***NWS/ Scarborough***	***North West Cape***	***Foraging***	***Breeding***	***Resting***
Roseate tern	✓	✓	✓	No foraging BIAs in the NWMR Foraging (provisioning young) and foraging BIAs located in the SWMR – Houtman Abrolhos Islands, the nearest BIA to the NWMR	Kimberley, Pilbara and Gascoyne coasts and islands, including Ashmore Reef, Dampier Archipelago, Montebello, Lowendal and Barrow island groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach
Sooty tern	-	-	✓	Foraging – Timor Sea out to 14º30, off north-west coast from Lacepede Island south-west to 117ºE. including the Abrolhos, Fisherman and Lancelin islands, unexpected on lower west coast to Hamelin Bay. Breeding visitor (late Aug to early May) Abrolhos and Lancelin islands; casual winter (Nov to Apr) to Fisherman Island	-	-
Wedge-tailed shearwater	✓	✓	✓	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is in the SWMR, including the Houtman Abrolhos Islands	Kimberley, Pilbara and Gascoyne coasts and islands, including Ashmore Reef	-
White-tailed tropicbird	✓	✓	-	-	Rowley Shoals and Ashmore Reef	-

Source: Geoscience Australia 2026

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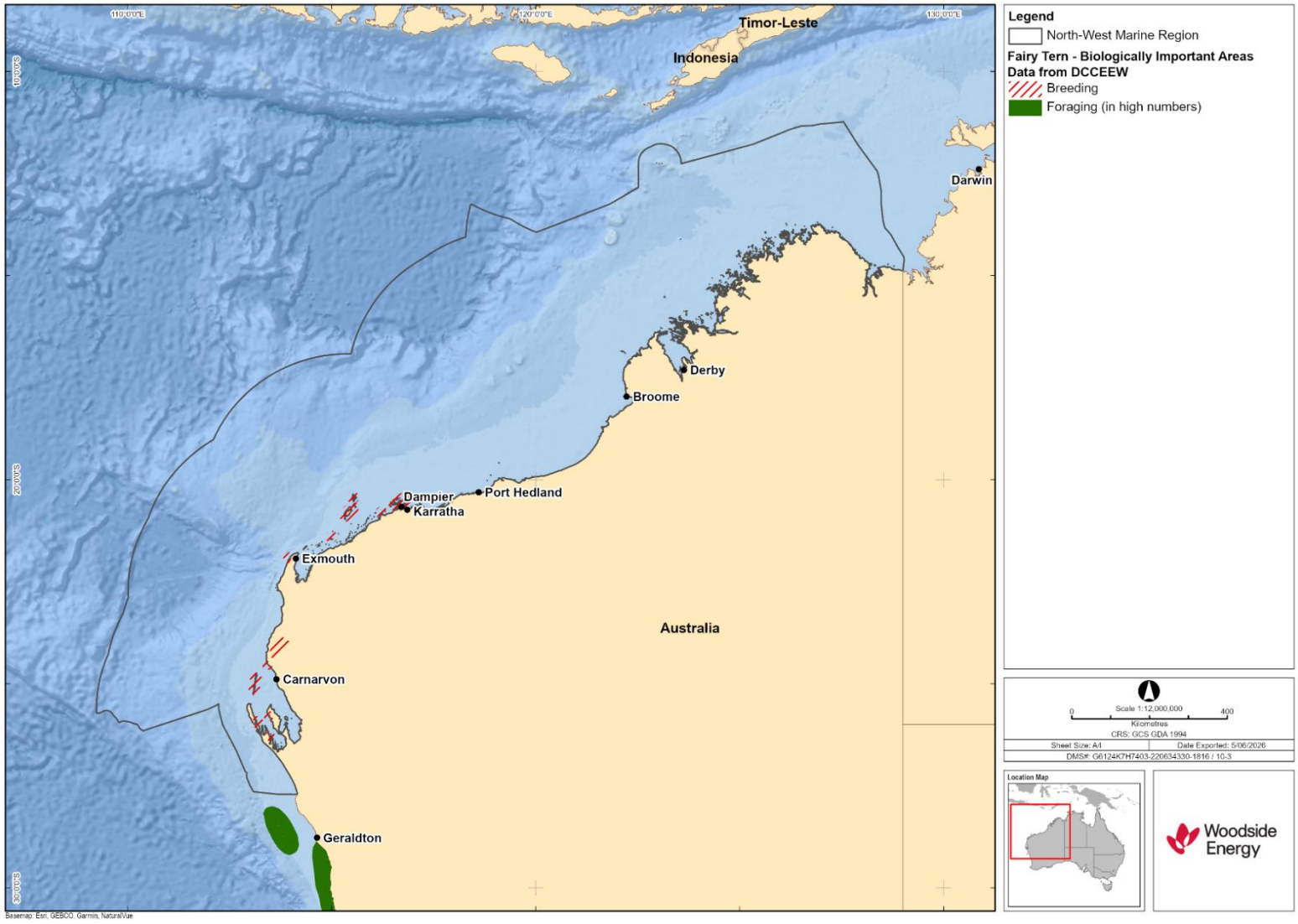


Figure 9-1: Australian fairy tern BIAs for the NWMR

Source: DCCEEW (2025b)

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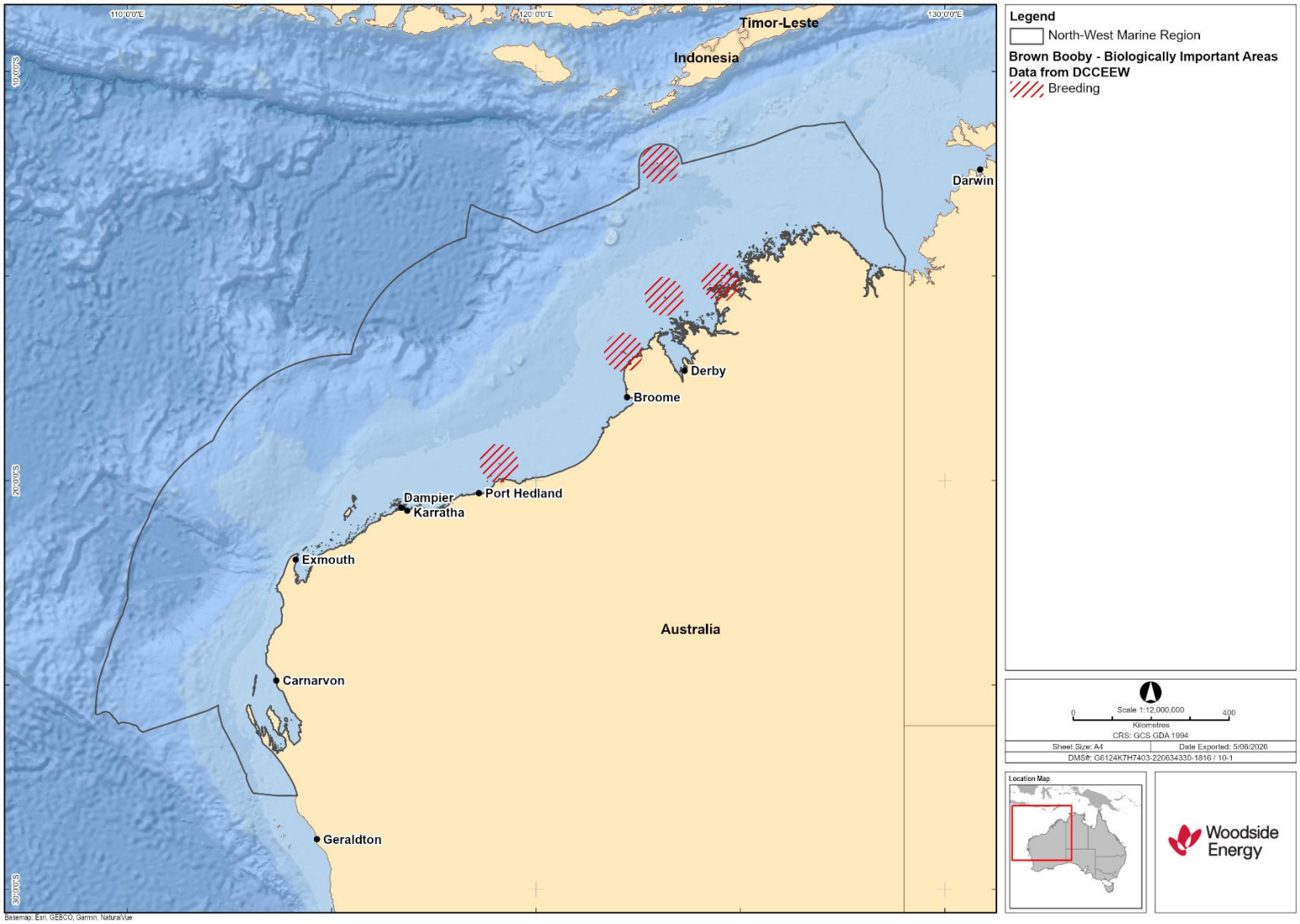


Figure 9-2: Brown booby BIAs for the NWMR

Source: DCCEEW (2025b)

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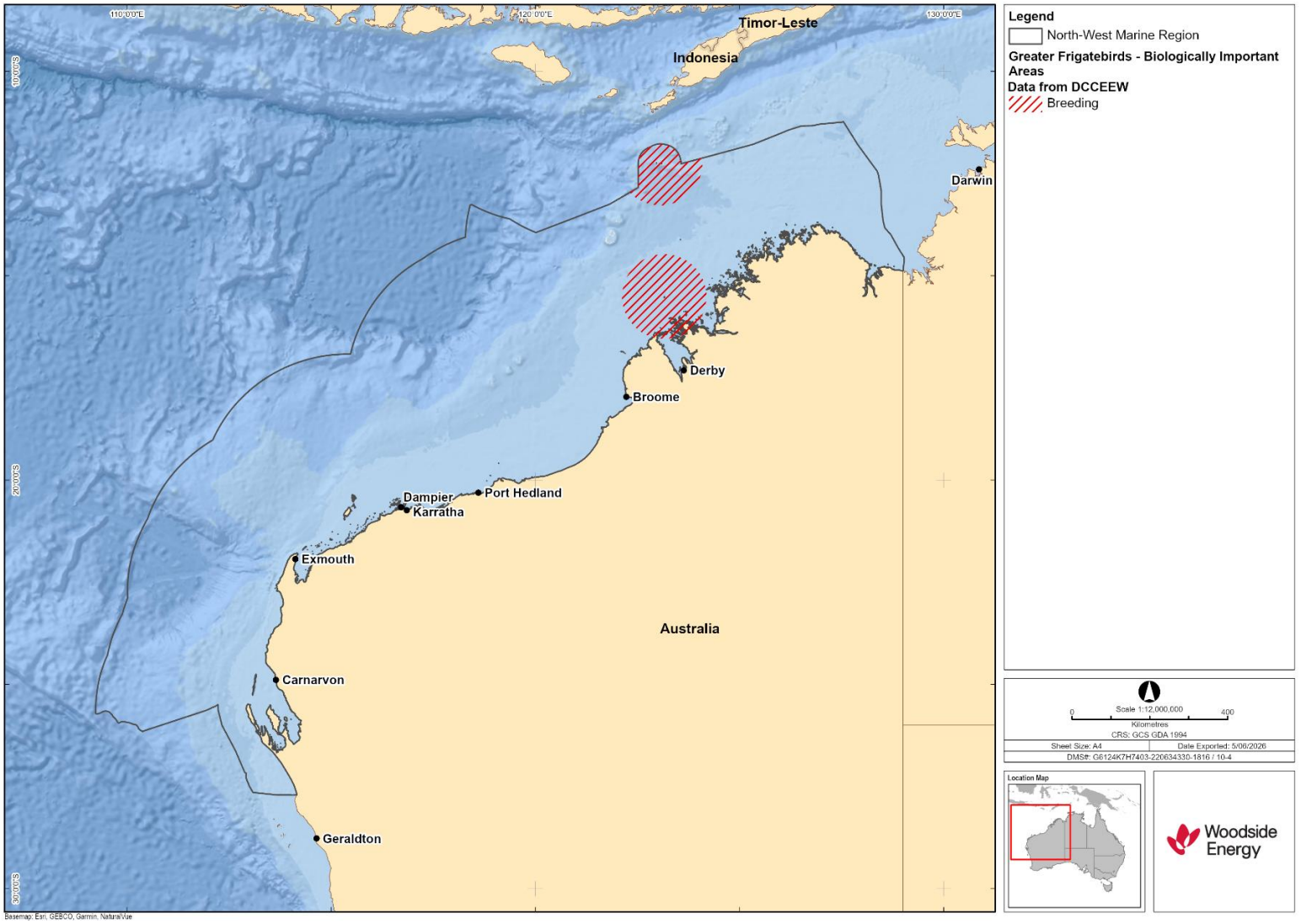


Figure 9-3: Greater frigatebird BIAs for the NWMR

Source: DCCEEW (2025b)

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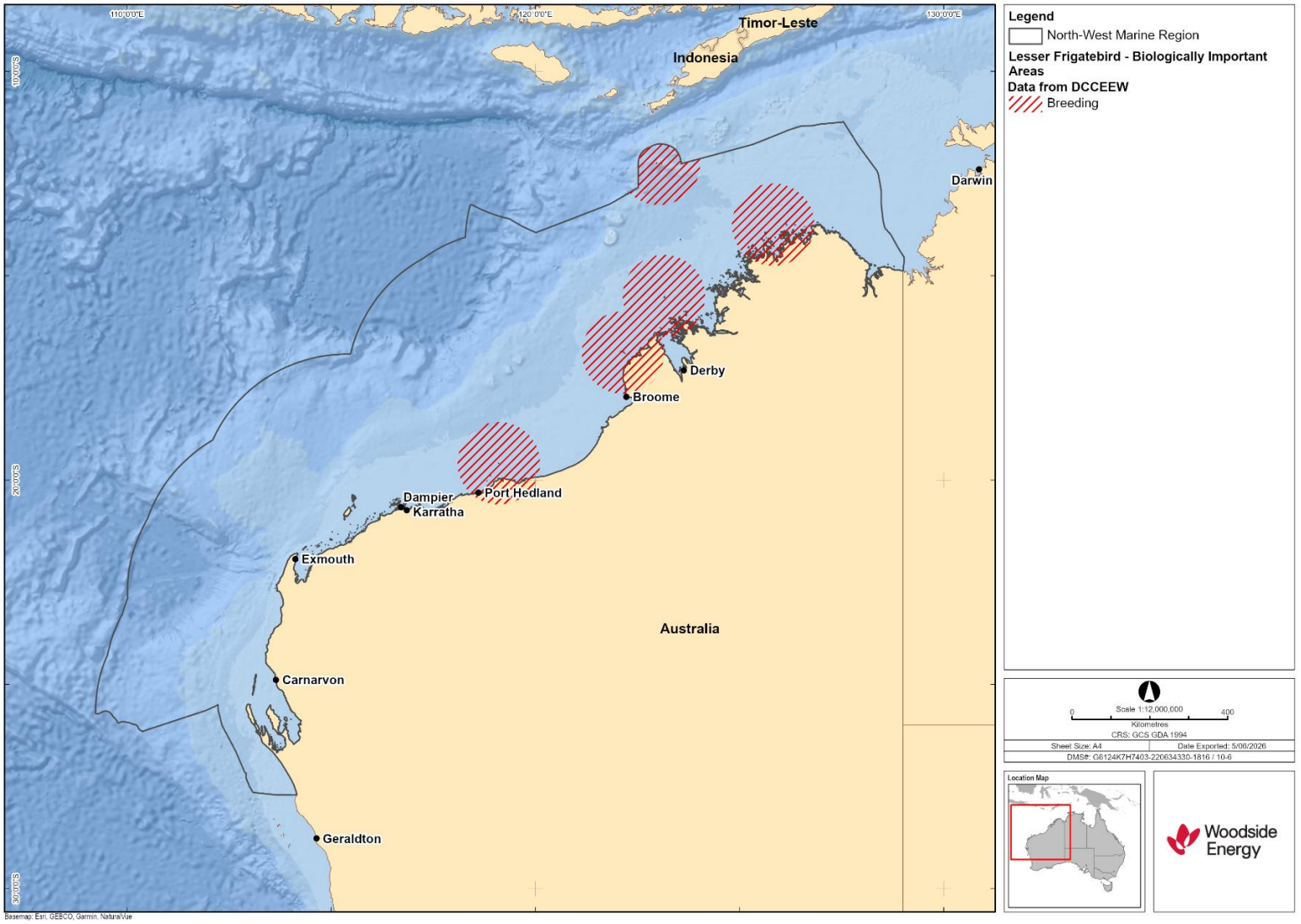


Figure 9-4: Lesser frigatebird BIAs for the NWMR

Source: DCCEEW (2025b)

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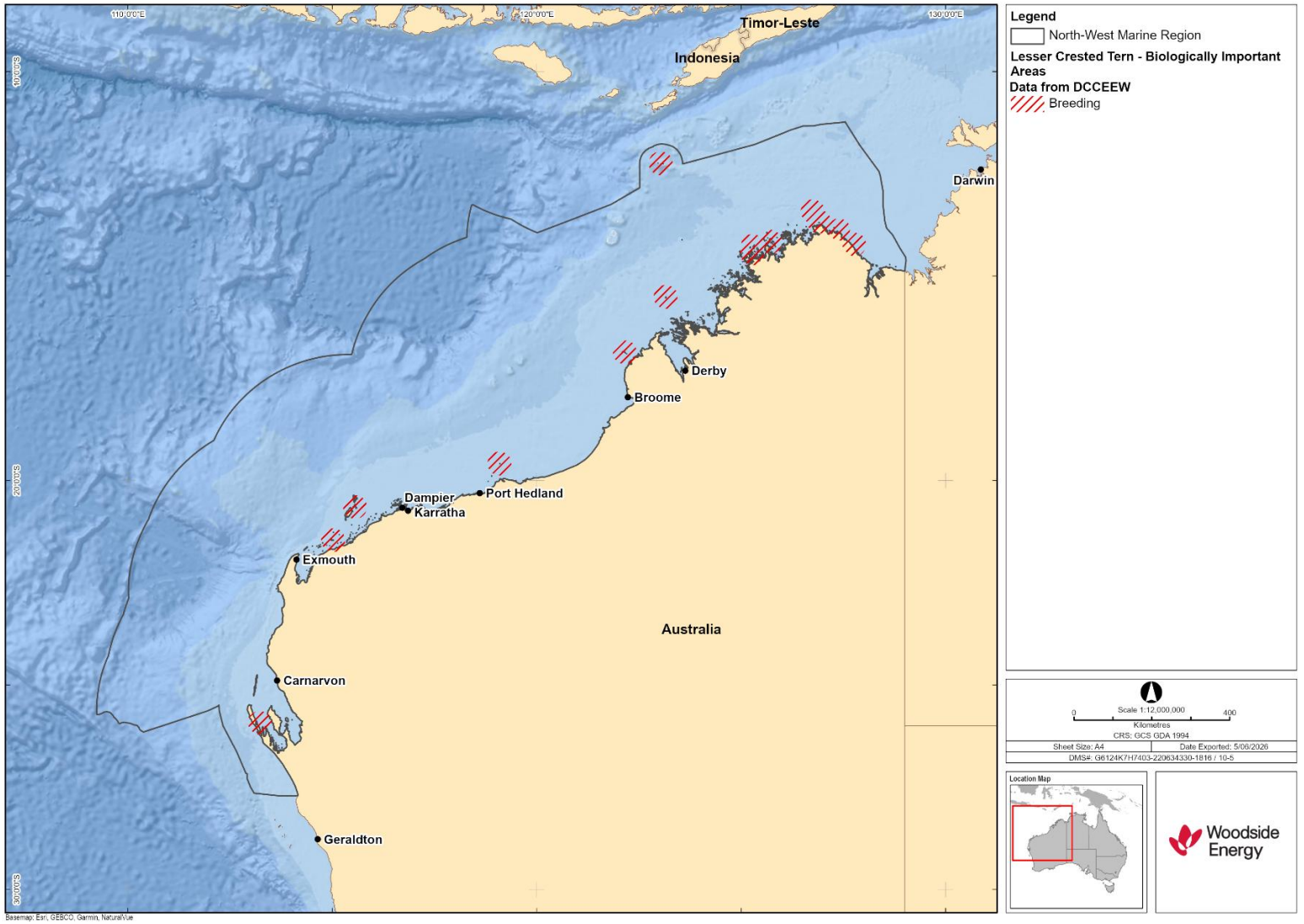


Figure 9-5: Lesser crested tern BIAs for the NWMR

Source: DCCEEW (2025b)

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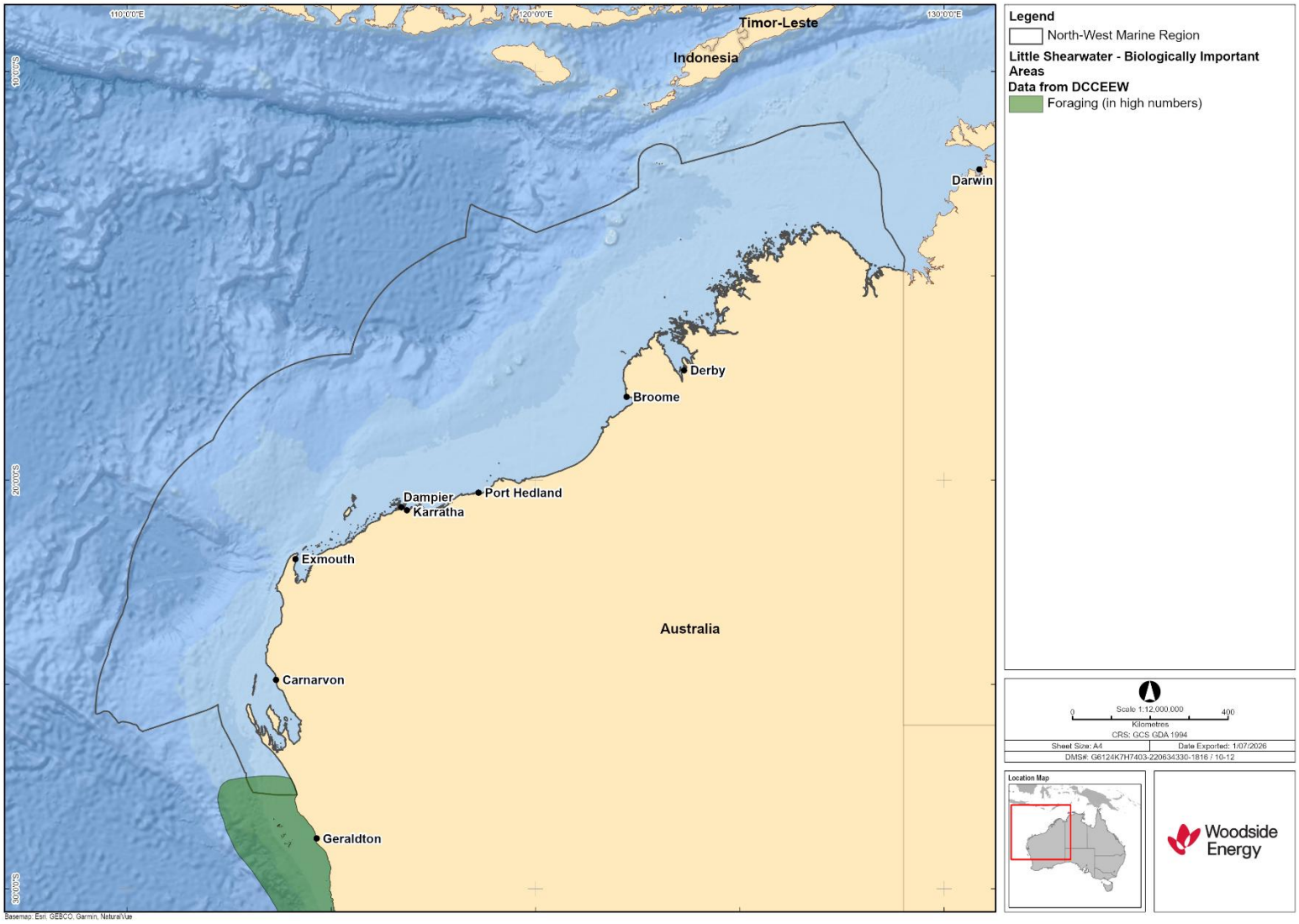


Figure 9-6: Little shearwater BIAs for the NWMR

Source: DCCEEW (2025b)

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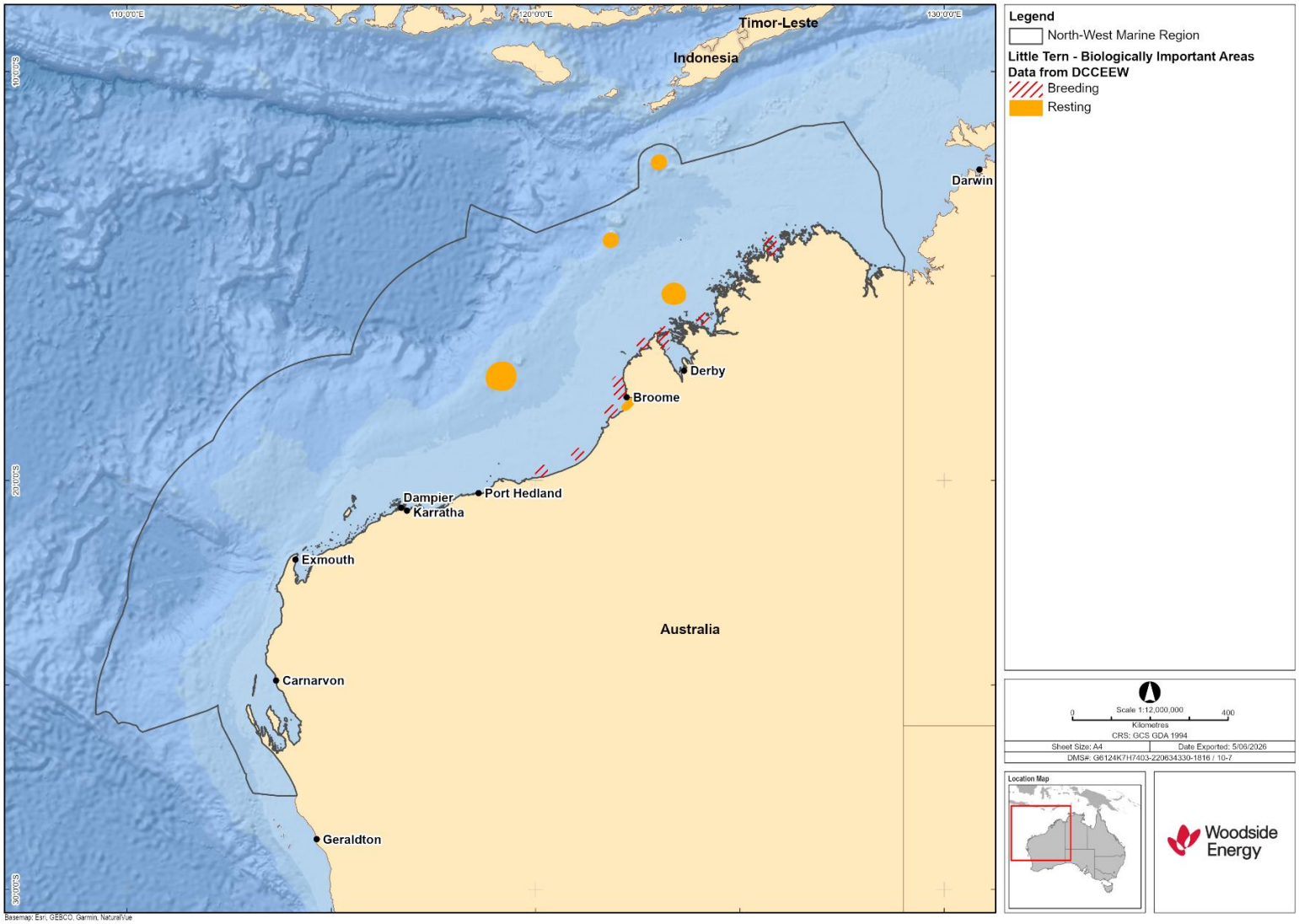


Figure 9-7: Little tern BIAs for the NWMR

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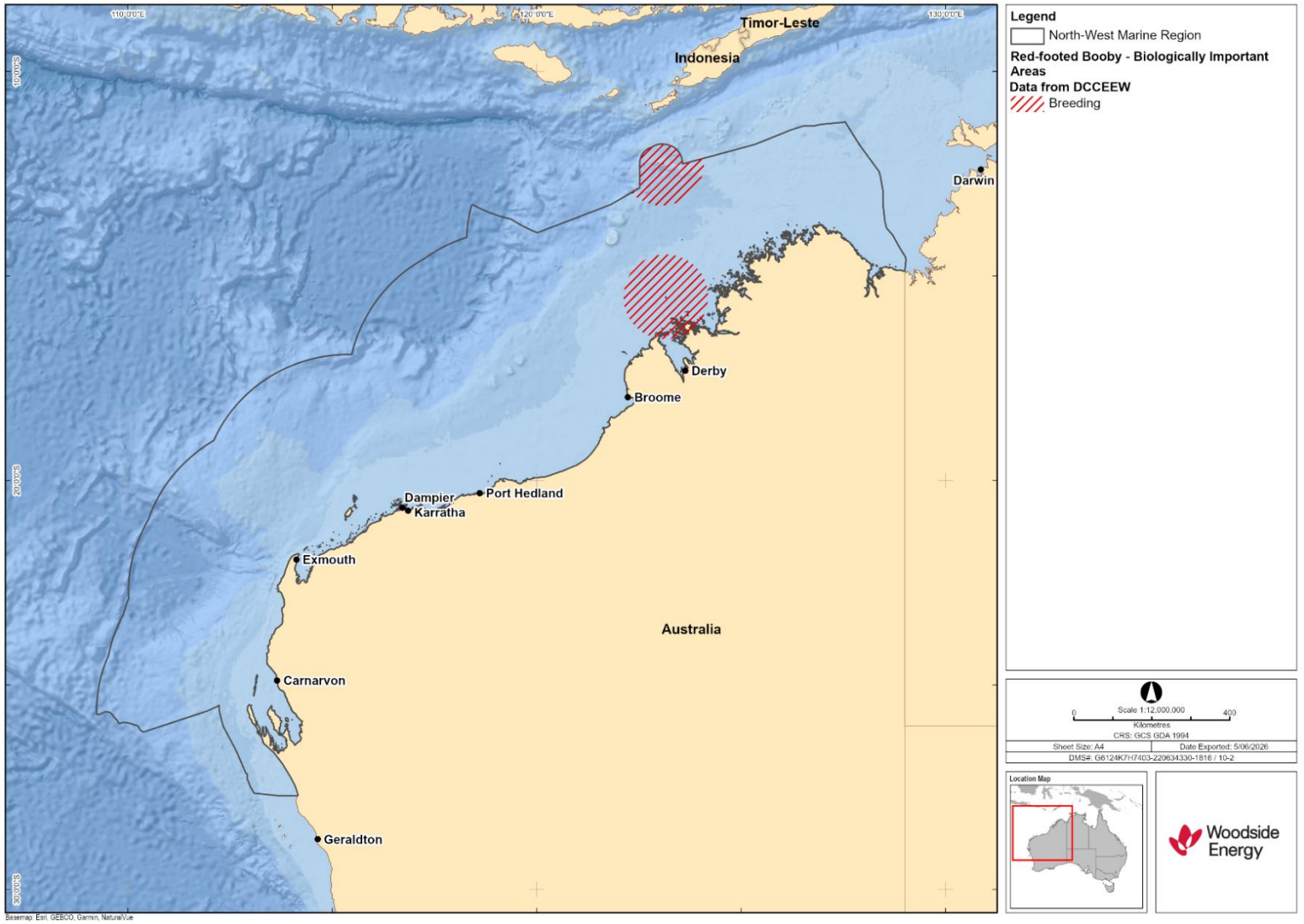


Figure 9-8: Red-footed booby BIAs for the NWMR

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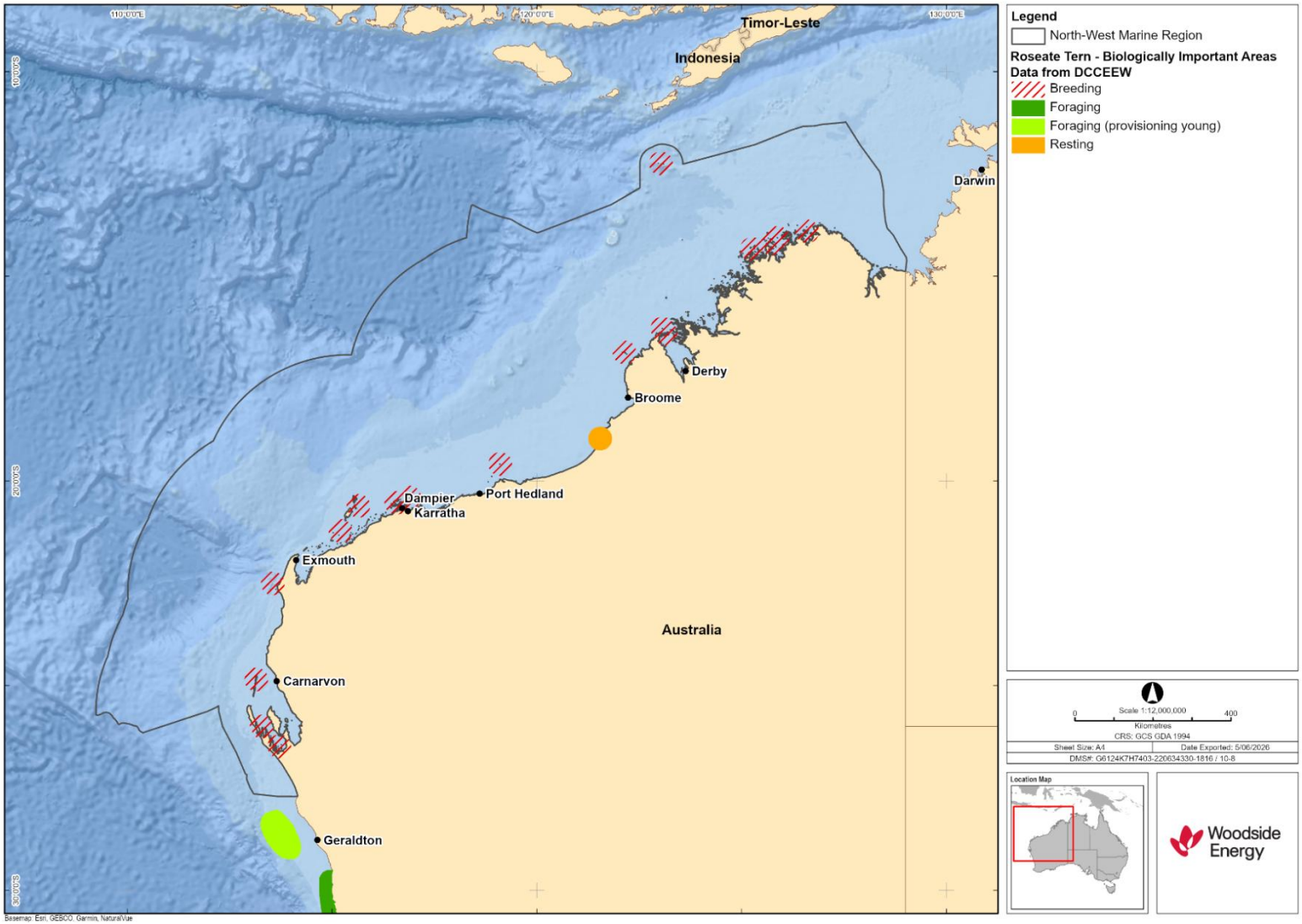


Figure 9-9: Roseate tern BIAs for the NWMR

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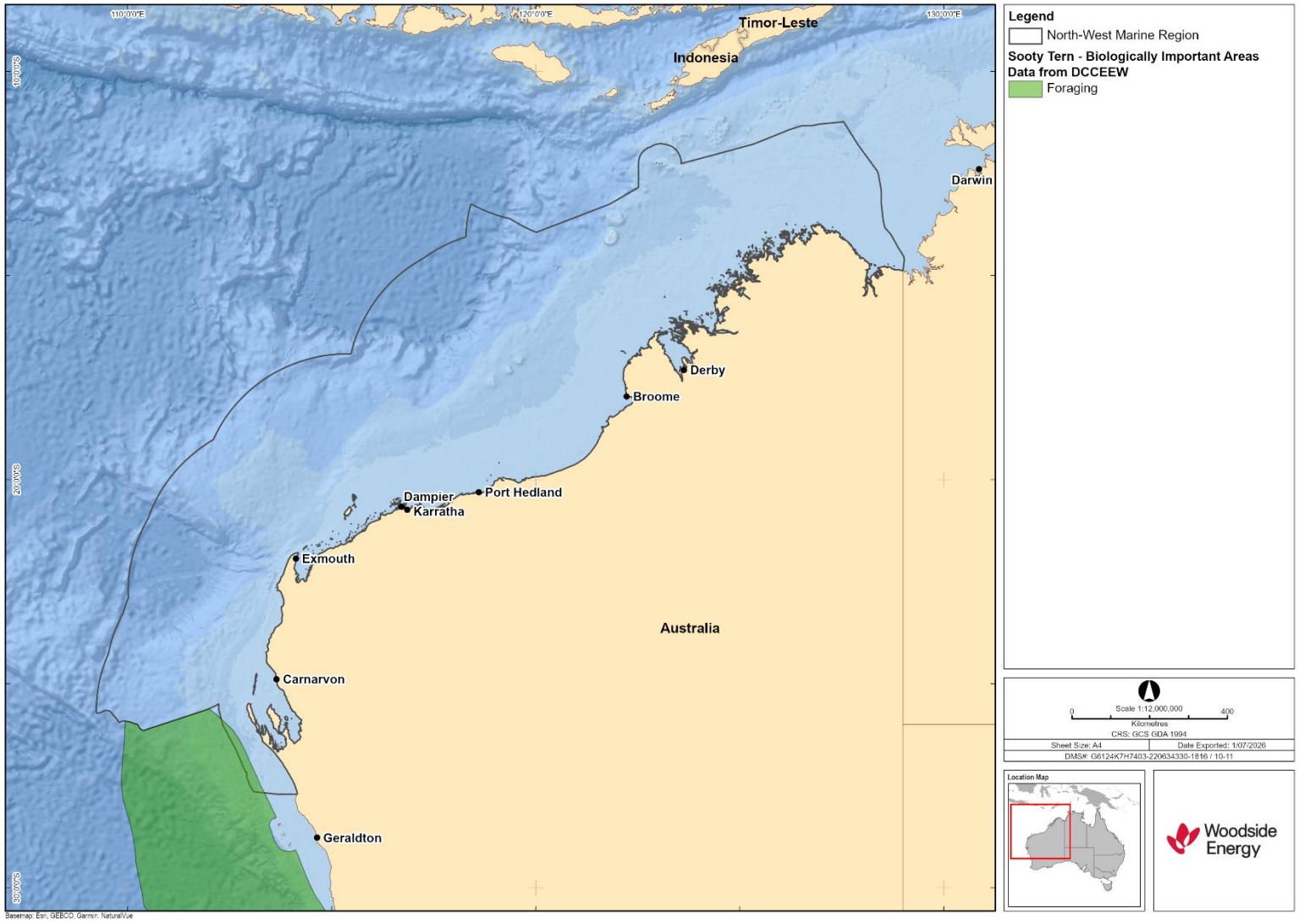


Figure 9-10: Sooty tern BIAs for the NWMR

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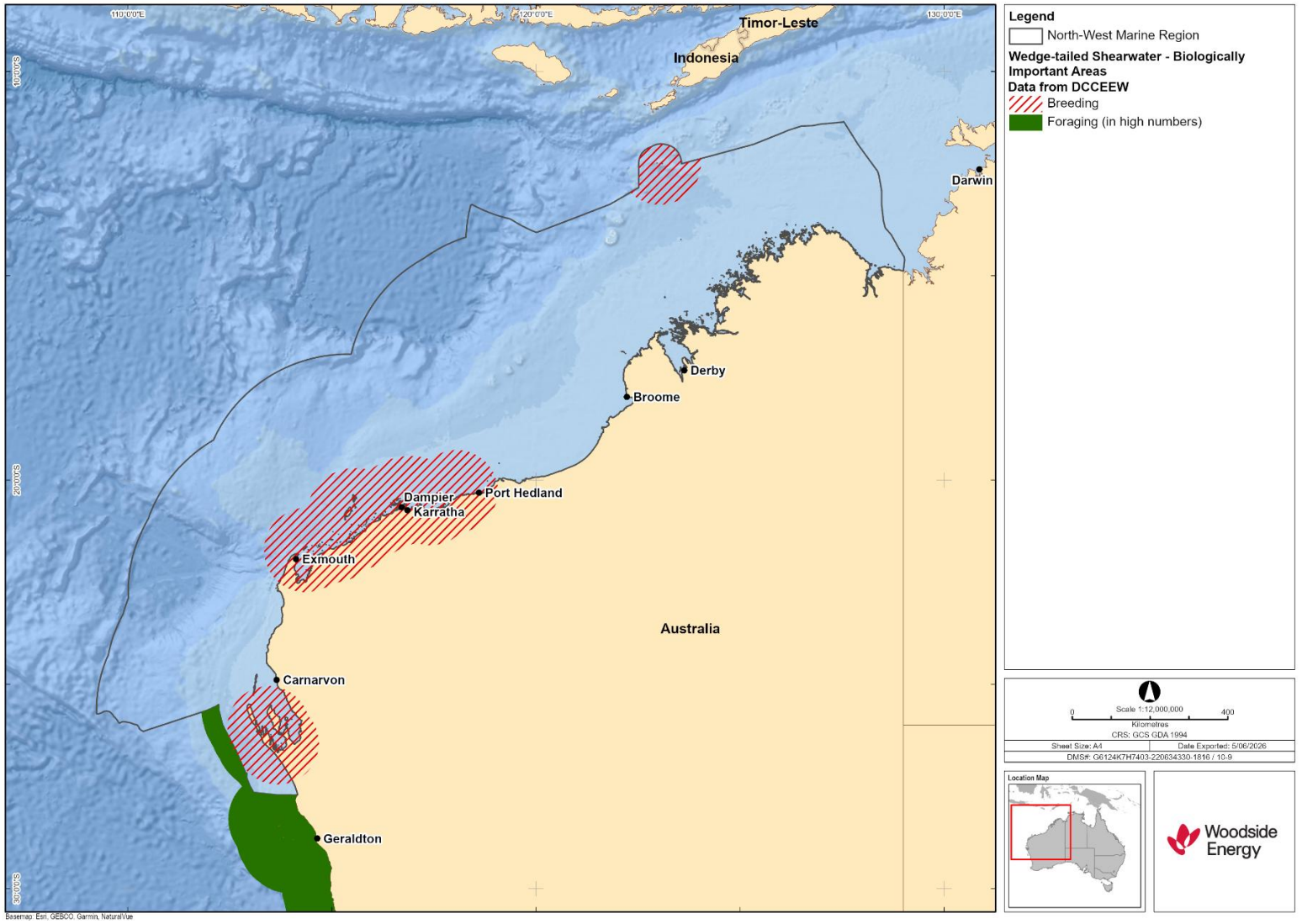


Figure 9-11: Wedge-tailed shearwater BIAs for the NWMR

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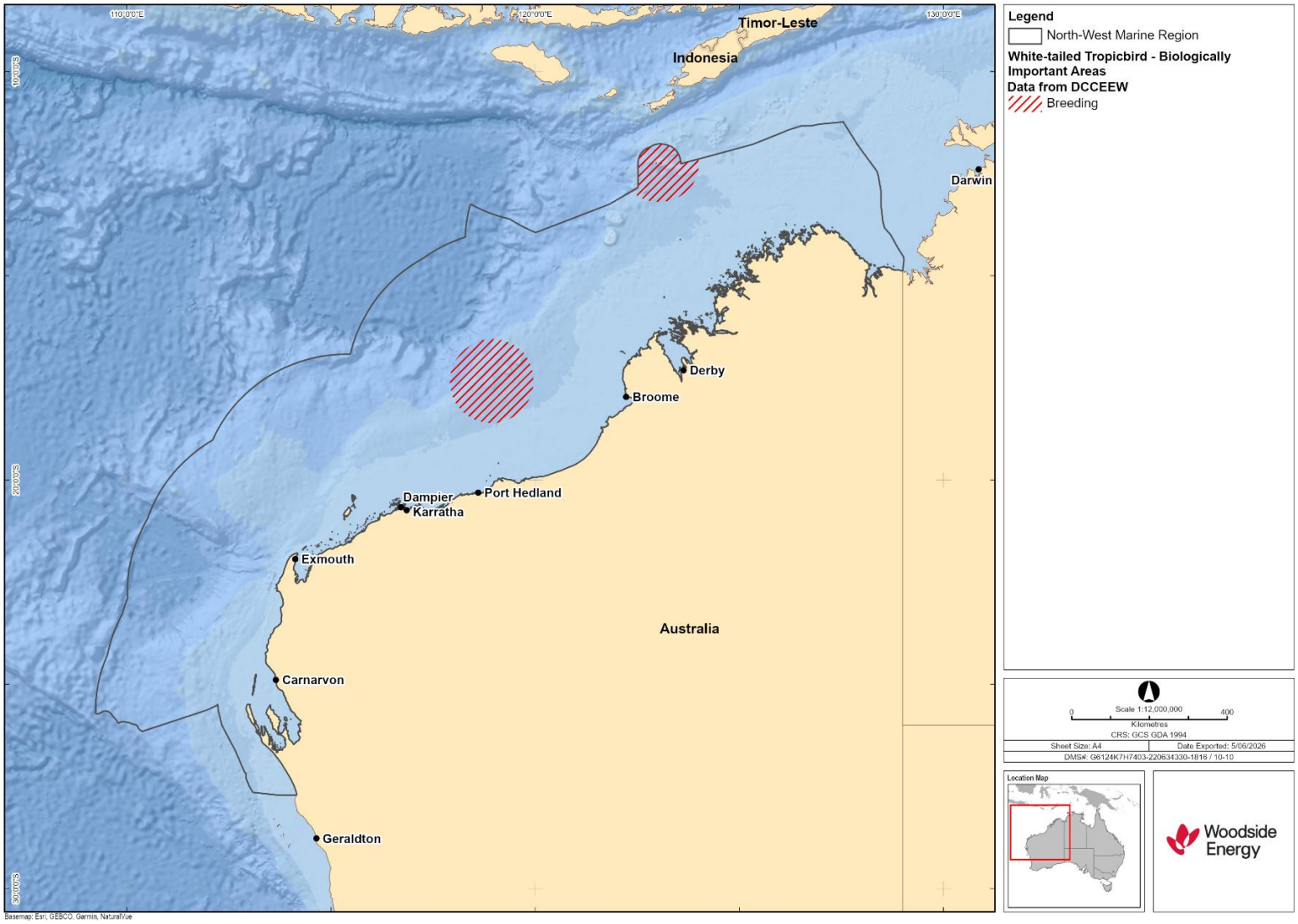


Figure 9-12: White-tailed tropicbird BIAs for the NWMR

Source: DCCEEW (2025b)

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9.3 Shorebirds in the NWMR

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environmentsI the NWMR hosts many, particularly in the Austral summer (see Appendix A for the EPBC Act PMST reports on listed species of shorebirds). Shorebirds may use coastal environments for feeding, nesting or migratory stopovers. In coastal environments, shorebirds generally feed during low tide on exposed intertidal mud and sand flats, and roost in suitable habitat above the high water mark.

At least 34 key shorebird species (high and moderate occurrence as per Worley (2024), or listed as threatened or migratory under the EPBC Act) are known to occur in the NWMR. The NWMR is situated within the EAAF, a geographic region supporting populations of migratory shorebirds throughout their annual cycle (Bamford *et al.* 2008). Australia supports >67% of the entire flyway population for 11 migratory shorebird species (such as the far eastern curlew, great knot, oriental pratincole, little curlew and red-necked stint) (Driessen *et al*. 2026). The EAAF extends from breeding grounds in the Russian tundra, Mongolia and Alaska southwards through east and southeast Asia, to non-breeding areas of Indonesia, Papua New Guinea, Australia and New Zealand (Weller and Lee 2017). All shorebird species identified undertake annual migrations from breeding sites in the northern hemisphere to more southern non-breeding sites within the EAAF (Bamford *et al.* 2008).

The EAAF encompasses a large proportion of the NWMR. Migratory shorebirds are known to migrate through the offshore areas of the NWMR between overwintering grounds in Australia and breeding sites in the northern hemisphere (Bamford *et al.* 2008). Peak migration occurs between March and May (northern migration) and August and November (southern migration) (Bamford *et al.* 2008). Several key EAAF sites in the NWMR, such as Eighty Mile Beach, Roebuck Bay and the Gulf of Carpentaria, receive large influxes of birds during the southward and northward migrations (Driessen *et al.* 2026). The 220 km stretch of sand, mudflats and mangroves of Eighty Mile Beach receives the largest numbers of shorebirds out of all the sites in Australia (Williams *et al.* 2026). During the southward migration, large influxes of birds begin arriving at key EAAF sites in the NWMR by late August before dispersing across Australia, with many reaching the southeastern states by October (Driessen *et al.* 2025). Immature migratory shorebirds have a slower southwards migration and tend to arrive in Australia from September to late November (Rogers *et al.* 2025). Toward the end of the non-breeding season, birds return to major sites within the NWMR by March, where they feed intensely to prepare for a northward migration in March and April (Driessen *et al.* 2025). Migration routes of some migratory shorebird species have been characterised using band recoveries (Minton *et al.* 2006), but the migration pathways taken between sightings are poorly understood.

Migratory shorebird species are in Australia during the non-breeding period (December to February), in coastal and inland habitats where adult birds feed and rest, accumulating the energy reserves necessary to support northward migration and subsequent breeding (Commonwealth of Australia 2015c). During this time, individuals must maintain an energy intake greater than their energy expenditure to recover from the southward migration, to allow moulting, and to build fat reserves in preparation for the northward migration The high energy demands of migration mean both foraging and resting during the non-breeding period are vital for individual fitness and survival (Commonwealth of Australia 2015c). Some young shorebirds may choose to delay migration based on achieving body composition and fuel stores to support migration, or due to the delayed timing of flight-feather and pre-breeding moults (Rogers *et al.* 2025). Coastal shorebird species tend to delay maturity more than species that spend their non-breeding season in non-tidal inland wetlands.

Long-term monitoring of 15 migratory shorebird taxa over 28 years shows varied population trajectories; four species have declined by more than 50%, three by more than 30%, five by less than 30%, and two species have increased. Notably, five species that declined by more than 30% exhibited higher mean annual growth rates in 2012 to 2021 compared to 1993 to 2012, indicating a potential slowing of decline (Rogers *et al.* 2025).

Due to differences in coastal or wetland habitat requirements between roosting and foraging behaviours, areas used most by migratory shorebirds usually comprise networks of coastal or wetland foraging and roosting habitats (Commonwealth of Australia 2015c). Coastal habitats such as mudflats, saltmarsh and mangroves, which are rich in benthic macroinvertebrates, are important foraging habitats for migratory shorebirds (Williams *et al.* 2026). Other foraging habitats can also include inland ephemeral wetlands, which have been recorded to intermittently support high numbers of migratory shorebirds after major rainfall events (Driessen *et al.* 2026).Shorebirds move between areas of this network, depending on the time of day, availability of resources, levels of disturbance and environmental conditions Displacement from one habitat or the other may result in use of sub-optimal habitat or increase in energetic demands via increased distance

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between habitats (Commonwealth of Australia 2015c). Foraging habitat preference is linked to the availability of prey as many shorebirds have narrow foraging and dietary niches, which vary between species (Williams *et al.* 2026).

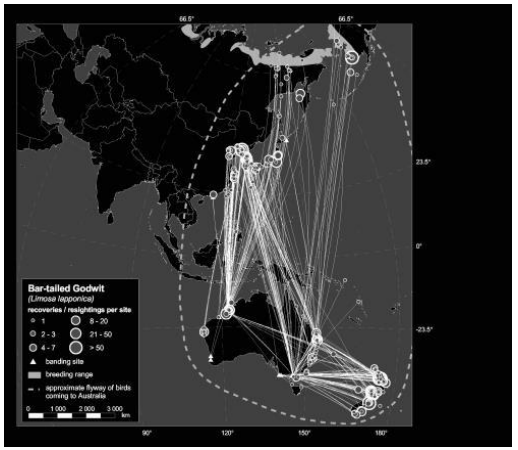
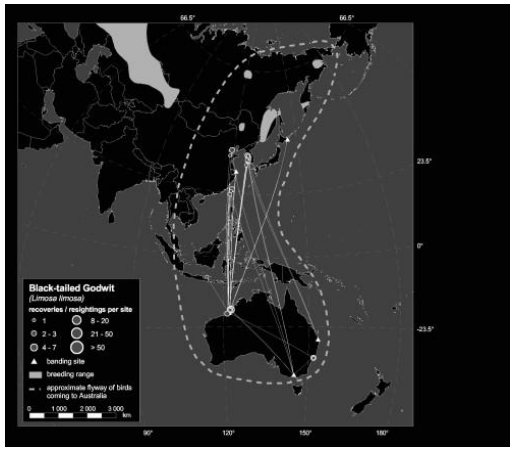
Within the EAAF, “a wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird” (Ramsar Convention Bureau 2000). All shorebirds identified as high occurrence key species occur in shoreline habitats within the NWMR for at least part of their non-breeding season in Australia.

Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPaC 2012a).

Table 9-4 and Table 9-5 provide descriptions for key high and moderate occurrence shorebird species, including information about migration routes where available. It should be noted that Minton *et al.* (2006) did not report on the Pilbara region or Exmouth Gulf, so the migratory pathways may be incompletely depicted.

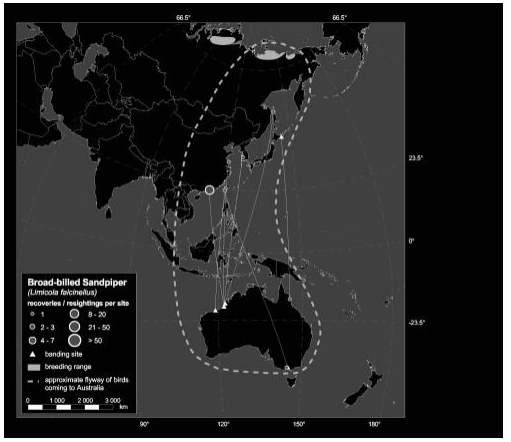
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Table 9-4: Species summary for high and selected moderate occurrence key shorebird species

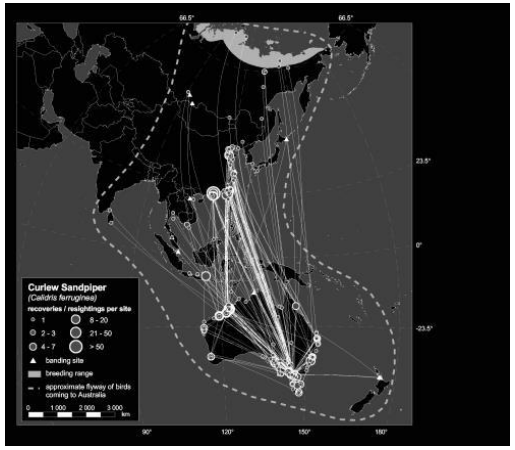
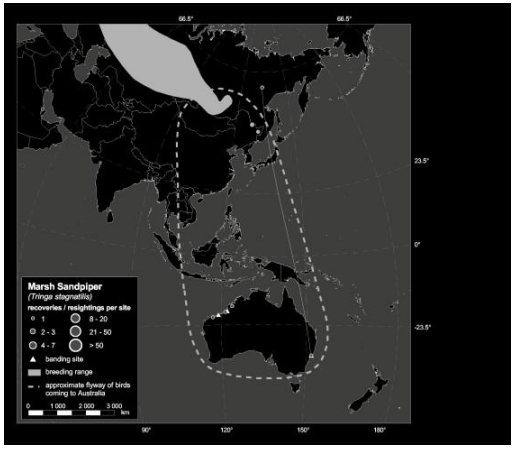
Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Bar-tailed godwit[16]	Widespread around the coast as far east as Derby, with a few scattered records elsewhere in the Kimberley *Internationally important sites:* • Roebuck Bay • Eighty Mile Beach	Sandy beaches, sandbars, spits and in near-coastal saltmarsh	Tidal estuaries and harbours	Worms, molluscs, crustaceans, insects and some plant material	
Black-tailed godwit	Found in coastal regions of all states and territories of Australia *Internationally important site:* • Roebuck Bay	Claypan	Intertidal mudflats or sandflats	Annelids, crustaceans, arachnids, fish eggs and spawn and tadpoles	

[16] Nominate species Limosa lapponica. Subspecies which may occur includes L. l menzbieri, which is listed Critically Endangered under the EPBC Act. Specific information on L. l menzbieri is lacking, but information regarding habitat use and diet for the nominate species is considered applicable.

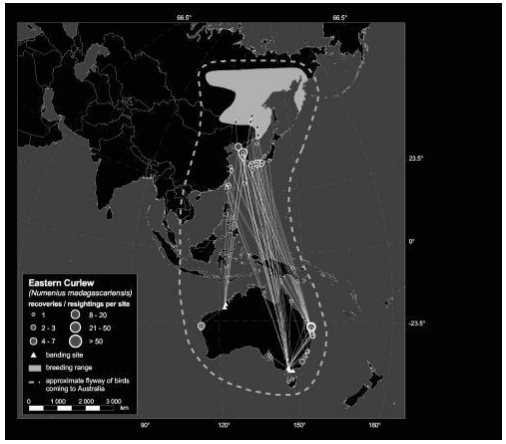
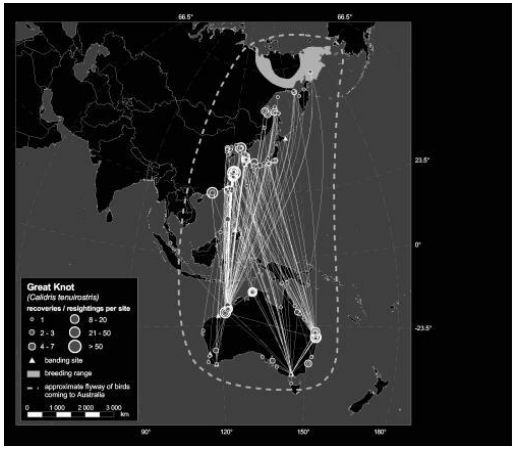
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Broad billed sand piper	Regular visitor to coasts of the Pilbara and Kimberley between Onslow and Broome *Internationally important site:* • Port Hedland Saltworks	Sheltered sandy, shelly or shingly beaches	Mudflats, mangroves	Molluscs, crustaceans, insects, seeds and worms, including polychaetes	
Common redshank	Records in the Gascoyne region, Coral Bay and Carnarvon Widespread from the Dampier Saltworks to Roebuck Bay and Broome Ashmore Reef	Sheltered coastal wetlands such as bays, river estuaries, lagoons, inlets and saltmarsh	Bare mud or sand, or on algal deposits, round the edges of wetlands	Worms, molluscs, crustaceans, arachnids and insects	Not available

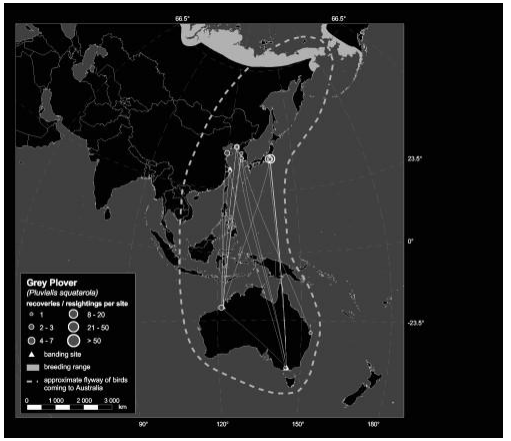
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Curlew sandpiper	Widespread around coastal and subcoastal plains Non-breeding one year old birds may remain in Australia rather than migrating north *Internationally important sites:* • Dampier Saltworks • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands	Mudflats and nearby shallow water	Worms, molluscs, crustaceans, insects and seeds	
Marsh sandpiper	Widespread; notable areas include Eighty Mile Beach, Port Hedland Saltworks	Tidal mudflats	Mudflats, marshy vegetation	Molluscs, crustaceans and insects	

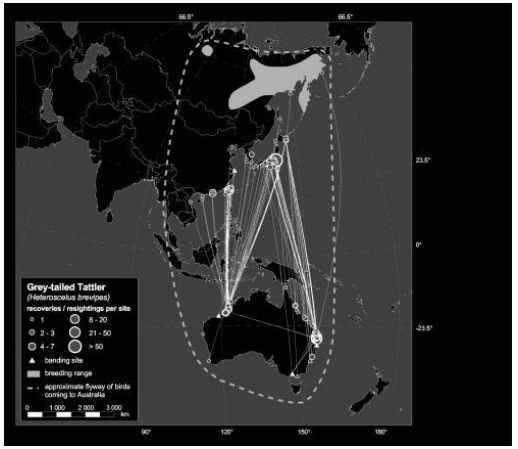
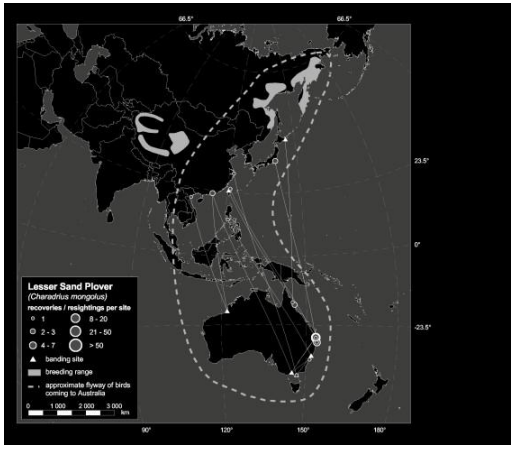
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Eastern curlew	Continuous distribution from Barrow Island and Dampier Archipelago through the Kimberley region *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Sandy spits, sandbars and islets, beaches near the high water mark, and coastal vegetation, including low saltmarsh or mangroves	Soft sheltered intertidal sandflats or mudflats, salt flats and saltmarsh, near mangroves, among rubble on coral reefs, and beaches near the tideline	Crustaceans, insects and small molluscs	
Great knot	Common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the NT border *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Roosts in large groups in open areas, often at the water's edge or in shallow water near feeding grounds	Sheltered coastal habitats with large intertidal mudflats or sandflats	Bivalves, gastropods, crustaceans and other invertebrates	

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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Greater sand plover	Widespread between North West Cape and Roebuck Bay *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Sand spits and banks on beaches or in tidal lagoons	Surface of wet sand or mud on open intertidal flats of sheltered embayments, lagoons or estuaries	Molluscs, worms, crustaceans and insects	
Grey plover	Widespread in coastal areas across Australia *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Sandy habitats, including unvegetated sandbanks or sand spits, sheltered beaches, estuaries or lagoons	Large areas of exposed mudflats and beaches of sheltered coastal shores	Molluscs, insects and their larvae, crustaceans and polychaete worms	

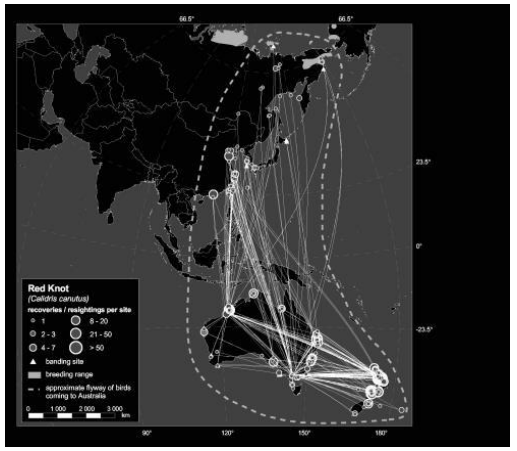
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Grey-tailed tattler	Widespread from Houtman Abrolhos and the mainland adjacent to the Kimberley *Internationally important sites:* • Barrow Island • Roebuck Bay • Eighty Mile Beach • Lacepede Islands	Branches of mangroves, snags or driftwood	Shallow water on hard intertidal substrates, such as reefs and rock platforms, in rock pools and among rocks and coral rubble	Polychaetes, molluscs, crustaceans, insects and, occasionally, fish	
Lesser sand plover	*Widespread, internationally important sites:* • Eighty Mile Beach • Roebuck Bay • Broome • Port Hedland Saltworks	Beaches, banks, spits of sand or shell, occasionally rocky spits, islets and reefs	Exposed intertidal sandflats and mudflats of beaches or estuaries, occasionally shallow water in saltworks	Molluscs, worms, crustaceans and insects	

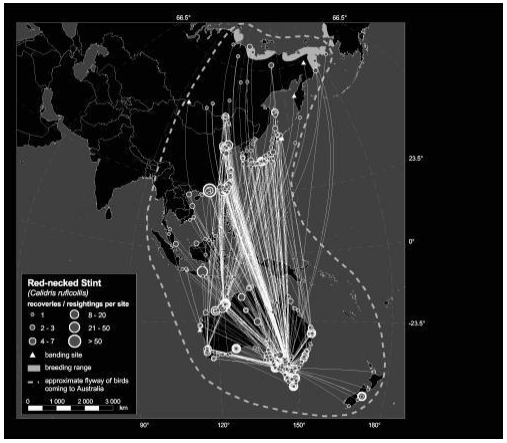
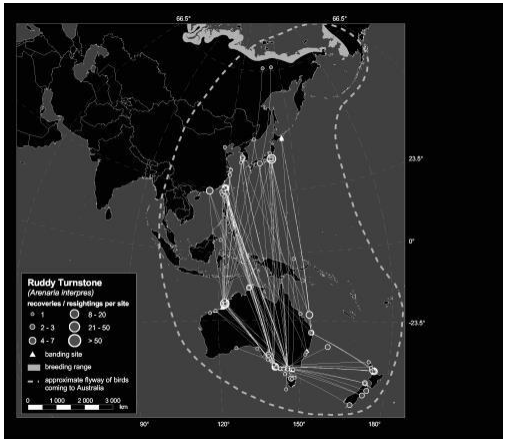
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Oriental plover	Most records are along the north-western coast between Exmouth Gulf and Derby in WA *Internationally important sites:* • Dampier Saltworks • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Soft wet mud or in shallow water of beaches and tidal mudflats	Short grass, hard stony bare ground, mudflats or among beach-cast seaweed on beaches	Insects, including termites, beetles, grasshoppers and crickets	Not available
Oriental pratincole	Widespread along the coasts of the Pilbara and Kimberley *Internationally important sites:* • Eighty Mile Beach • Roebuck Plains	Bare areas such as claypans or areas with low vegetation, such as saltmarsh	Open plains, floodplains or short grassland, artificial wetlands (saltworks), beaches, mudflats and islands, or around coastal lagoons Usually feeds aerially, at heights varying from just above the ground up to 300 m	Insects, including dragonflies, cicadas, beetles, moths, ants, termites, locusts, grasshoppers, flies, bees and wasps	Not available

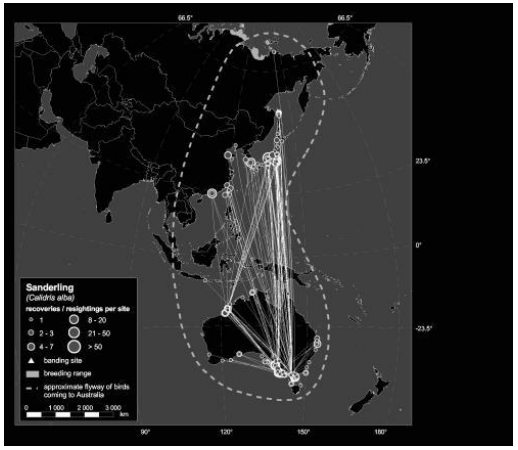
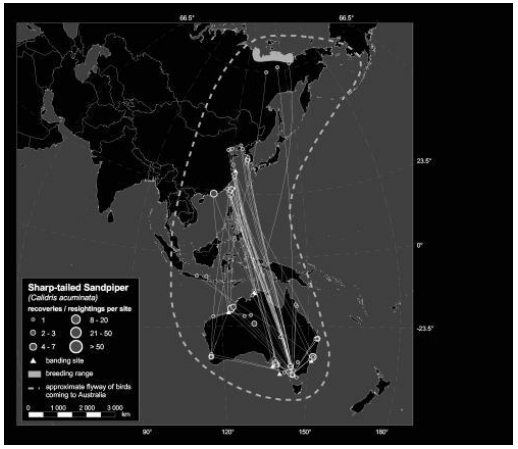
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Pacific golden plover	Widespread along the coasts of the Pilbara and Kimberley *Nationally important site:* • Eighty Mile Beach	Sandy beaches and spits, rocky points, islets, exposed reef, occasionally mangrove and saltmarsh vegetation, beach-cast seaweed, levee banks and saltwork evaporation ponds	Sandy, muddy and rocky shores, sheltered estuaries and lagoons, occasionally saltmarsh, mangrove or pasture	Molluscs, polychaete worms, insects, insect larvae, spiders, crustaceans, occasionally seeds, leaves, lizards, bird eggs and fish	
Red knot	Large numbers regularly recorded in north-west Australia *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Sandy beaches, spits and islets, and mudflats near feeding grounds	Soft substrate near the water edge, including intertidal mudflats and sandflats exposed by low tide	Worms, bivalves, gastropods, crustaceans and echinoderms	

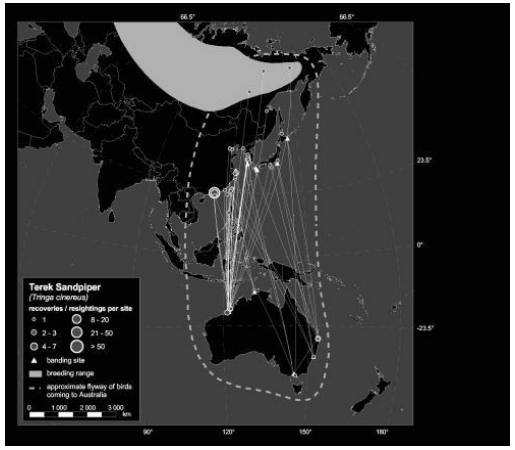
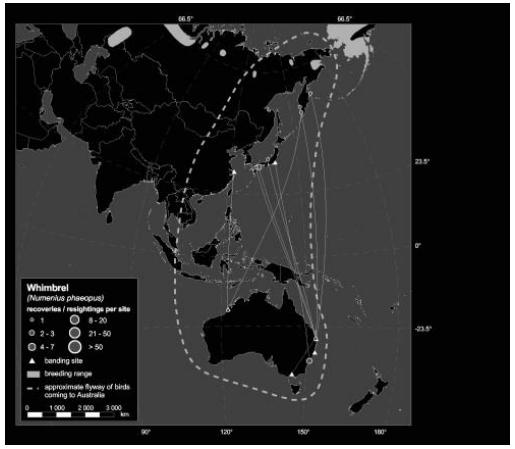
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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Red-necked stint	Widespread in coastal areas across Australia *Internationally important sites:* • Barrow Island • Port Hedland Saltworks • Eighty Mile Beach • Roebuck Bay	Sheltered beaches, spits, banks or islets of sand, mud, coral or shingle, occasionally in saltmarsh or other vegetation	Feed in dense flocks on bare wet mud such as intertidal mudflats or sandflats, or in very shallow water	Marine worms, molluscs, snails and slugs, shrimps, spiders, beetles, flies and ants	
Ruddy turnstone	Found in most coastal regions across Australia *Internationally important sites:* • Barrow Island • Eighty Mile Beach • Roebuck Bay • Lacepede Islands	Beaches above the tideline, among rocks, shells, beach-cast seaweed or other debris	Between lower supralittoral and lower littoral zones of foreshores. Often forage among banks of stranded seaweed or other tide-wrack Occasionally forage on exposed rocky platforms, coral reefs and mudflats	Insects, worms, crustaceans, molluscs and spiders Occasionally been known to eat fish, birds' eggs and carrion, and human food scraps	
Ruff	Periodically recorded in Port Hedland, Kununurra and the Argyle Diamond Mine	Wetlands with exposed mudflats and short, dense vegetation	Exposed mudflats with shallow water and dry mud	Moss, plant fibre, seeds, annelid worms, molluscs, crustaceans, spiders, insects, fish and amphibians	Not available

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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Sanderling	Occur across most of the NWMR coast as far east as Derby *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Bare sand high on the beach clumps of washed-up kelp, coastal dunes, rocky reefs and ledge	Open sandy beaches exposed to open sea swell, exposed sandbars and spits and shingle banks, where they forage in the wave-wash zone and among rotting seaweed	Plants, seeds, worms, crustaceans, spiders, insects Occasionally on medusae, fish, larger molluscs and crustaceans taken as carrion	
Sharp-tailed sandpiper	Widespread from Cape Arid to Carnarvon, around coastal and subcoastal plains of the Pilbara to Kimberley *Internationally important site:* • Port Hedlands Saltworks • Eighty Mile Beach	Edges of wetlands, on wet open mud or sand, in shallow water, or in short, sparse vegetation, such as grass or saltmarsh	Edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water Also forage among inundated vegetation of saltmarsh, grass or sedges	Seeds, worms, molluscs, crustaceans and insects	

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Species	Presence in NWMR	Roosting habitat	Foraging habitat	Diet	Migration From Minton *et al.* (2006)
Terek sandpiper	The species is widespread in the Pilbara and Kimberley, from Dampier to Wyndham, with occasional records around Shark Bay *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	In or among mangroves, may perch in branches or roots up to 2 m from the ground, or in shade beneath	Soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons	Crustaceans, insects, seeds, molluscs and arachnids	
Whimbrel	Widespread from Carnarvon to the north-east Kimberley Primarily coastal distribution; there are also scattered inland records of whimbrels in all regions *Internationally important site:* • Roebuck Bay	Regularly roost in mangroves and other structures flooded at high tide May also roost on ground of muddy, sandy or rocky beaches, rocky islets and coral cays	Intertidal mudflats, muddy banks of estuaries and in coastal lagoons, open unvegetated areas or among mangroves Occasionally on sandy beaches or among rocks	Annelids, crustaceans and, rarely, vertebrates (such as small fish, little tern chicks)	

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Table 9-5: Species summary for moderate occurrence key shorebird species

Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Asian dowitcher	Regular visitor to the north-west between Port Hedland and Broome *Internationally important sites:* • Roebuck Bay • Port Hedland saltworks	Coastal lagoons, estuaries and tidal creeks	Intertidal mud flats	Polychaete worms and larvae, also insect larvae and molluscs
Australian painted snipe	Widespread in low numbers	Shallow freshwater wetlands with bare mud and dense canopy cover	Dense vegetation cover, occasionally mudflats and grassland	Vegetation, seeds, insects, worms, molluscs and crustaceans
Little curlew	Widespread with distribution concentrated along the northern coast from Port Hedland during the non-breeding season *Internationally important sites:* • Roebuck Plains • Roebuck Bay • Anna Plains • Derby Sewage Ponds • Parry Floodplain	Short, dry grassland, and occasionally dry saltmarshes, coastal swamps, mudflats or sandflats in estuaries, or on the beaches of sheltered coasts	Short, dry grassland and sedgeland with shallow freshwater pools or seasonal inundation	Insects, seeds and berries
Common greenshank	Occurs in all types of wetlands and has the widest distribution of any shorebird in Australia *Internationally important sites:* • Eighty Mile Beach • Roebuck Bay	Wetlands, shallow pools and puddles, or slightly elevated on rocks, sandbanks or small muddy islets	Edges of wetlands, in soft mud on mudflats, in channels, among pneumatophores of mangroves or other sparse, emergent or fringing vegetation, such as sedges or saltmarsh	Molluscs, crustaceans, insects, and occasionally fish and frogs
Common sandpiper	Widespread in low numbers	Rocks or in roots or branches of vegetation, especially mangroves	Bare soft mud at the edges of wetlands	Molluscs, crustaceans and insects
Pectoral sandpiper	Low numbers recorded across the Gascoyne, Pilbara and Kimberley regions	Coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands	Bare soft mud at the edges of wetlands	Algae, seeds, crustaceans, arachnids and insects

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Species	NWMR presence	Roosting habitat	Foraging habitat	Diet
Wood sandpiper	NWMR supports largest numbers in Australia; notable areas include Parry floodplain, Shark Bay	Low trees, grassy hillocks	Bare, soft mud at the edges of wetlands	Insects and molluscs
Long-toed stint	Widespread along the coasts of the Pilbara and Kimberley	Shallow inland wetlands	Wetland or islets with wet mud or shallow water and short vegetation	Seeds, molluscs, crustaceans, insects, occasionally algae
Pin-tailed snipe	Recorded in the Pilbara, Port Hedland, Myaree Pool, Maitland River and near Karratha	Wide variety of wetland habitats, including flooded paddy fields, wet grasslands, seepage swamps and marshland	Muddy shorelines of swamps and along streams	Molluscs, adult and larval insects, earthworms and occasionally crustaceans, seeds and other plant matter
Swinhoe's snipe	Recorded in the Pilbara, Kimberley, Mount Goldsworth, Mount Blaize and near the Mitchell Plateau	Grasses and rushes around the edge of fresh and brackish marshes	Grasses and rushes near the water edge, in addition to hummocks or on mudflats around seepage areas	Earthworms, adult and larval insects

9.4 Other marine birds in the NWMR

Table 9-6 summarises species descriptions for high occurrence key other marine bird species.

Table 9-6: Species summary for high occurrence key other marine bird species

Species	NWMR presence	Predominant feeding behaviour	Diet
Fork-tailed swift	Non-breeding: Oct to Apr Widespread in coastal areas as far north as Carnarvon, including some on nearshore and offshore islands Scattered along the Pilbara coast to the east Kimberley region	Aerial forager, flying anywhere from 1 m to 300 m above the ground to forage Typically feed in flocks ranging from 10 to 1,000 birds	Insectivorous
Osprey	Breeding: April to February, though depends on latitude; NWMR individuals breeding early in the season compared to the SWMR Non-breeding: Remain in breeding territories Continuous distribution of the species around the coast except for a possible gap at Eighty Mile Beach	Hover momentarily then dive down, sometimes in stages, before snatching prey from near the surface with the feet or by plunging into the water feet first	Fish, especially mullet where available Rarely take molluscs, crustaceans, insects, reptiles, birds and mammals

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10. THREATENED AND MIGRATORY SPECIES' SEASONAL PRESENCE

Seasonal sensitivity for key threatened and migratory species in the NWMR and applicable to Woodside activities are presented in Table 10-1. The timing presented is displayed as a broad representation for the NWMR, with location specific seasonality presented within Environment Plans (EPs).

Table 10-1: Seasonal sensitivity of key threatened and migratory species in the NWMR

Species	January	February	March	April	May	June	July	August	September	October	November	December
Fishes, sharks and rays												
Whale shark – foraging (northward from Ningaloo) Whale shark foraging northward from Ningaloo in Spring[1] Migration along the north coast of WA also known to occur between July and November[2] Potential presence of whale sharks year-round at Ningaloo[3]												
Whale shark – foraging (high density prey, Ningaloo Reef) Whale shark foraging (high density prey) Ningaloo April to June, Autumn[1] March to July[2] Potential presence of whale sharks year-round at Ningaloo[3]												
Dwarf sawfish – reproduction[1] Potential to occur all seasons												
Dwarf sawfish – foraging[1] Potential to occur all seasons												
Largetooth (freshwater) sawfish – reproduction (pupping)[1] Pupping occurs from January to May												
Largetooth (freshwater) sawfish – foraging[1]												
Green sawfish (reproduction)[1]												
Green sawfish (foraging)[1]												

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Species	January	February	March	April	May	June	July	August	September	October	November	December
Marine reptiles – marine turtle nesting [note, hatchling emergence is generally six to eight weeks after nesting activity]												
Green turtle												
Ashmore Reef stock (G-AR)[1, 4] Mating occurs September to November Nesting occurs year round (peak December to January) Hatching September to May												
Scott Reef-Browse Island stock (G-ScBr)[1, 4] Mating: October Nesting: November to March (peak January to February) Hatching: Peak March to April												
NWS stock (G-NWS)[1, 4] Mating: September to December Nesting: November to March (peak December to February) Hatching: January to May (peak February to March)												
Hawksbill turtle												
WA stock (H-WA)[1, 4] Mating: Unknown Nesting: November to March (peak January) Hatching: January to May												
Flatback turtle												
Cape Domett stock (F-CD)[1, 4] Mating: year round Nesting: all year (peak August to September) Hatching: all year												
South-west Kimberley stock (F-swKim)[1, 4] Mating: year round Nesting: all year (peak December to January) Hatching: all year												

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Species	January	February	March	April	May	June	July	August	September	October	November	December
Pilbara stock (F-Pil)[1, 4] Mating: September to January Nesting: October to March (peak November to January) Hatching: February to March												
Unknown genetic stock, Kimberley, WA[1, 4] May to July												
Loggerhead turtle												
WA stock (LH-WA)[1, 4] Mating: Unknown Nesting: November to March (peak January) Hatching: January to May												
Olive ridley turtle												
Unknown genetic stock, Kimberley, WA[1, 4] May to July												
Cetaceans												
Fin whale[5] Fin whale presence NWMR May to October Migrating north from Cape Leeuwin (SWMR) May to October Present offshore Dampier August to October												
Humpback whale – northern migration[6] Range June to September[1, 6, 14] Peak July to August[7]												
Humpback whale – southern migration[7] Range July to November. Peak August to October[6, 7, 8, 14]												
Humpback whale – reproduction (nursing, Kimberley coast)[8] Reproduction (nursing, Kimberley coast) Winter (June to August)[1] Breeding August to September[6, 14] Calves present off Kimberley in October[9]												

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Species	January	February	March	April	May	June	July	August	September	October	November	December
Omura's whale Limited data but sightings reported year round[9]												
Pygmy blue whale – northern migration[10] Pygmy blue whale northern migration April to August[1, 6, 11, 12] Peak April to July[13] From the Perth Canyon (April/May) to the NWS (June/July) [13]												
Pygmy blue whale – southern migration[11] Migration October to December, possibly into January[1, 6] Peak November to December[13]												
Southern right whale (calving/presence in NWMR)[12] Calving and migratory presence in Exmouth Gulf (NWMR) June to September[1] Peak: July and August[1]												
Seabirds (high occurrence seabirds with designated BIAs[15]												
Wedge-tailed shearwater – breeding/foraging *fledgling emergence (first two weeks of April)				*								
Australian lesser noddy NWMR presence in non-breeding period *breeding – Ashmore Reef and Abrolhos, may forage in NWMR								*	*	*	*	*
Common noddy – breeding												
Bridled tern – breeding and foraging												
Great frigatebird – breeding/foraging *possibly present in NWMR in non-breeding and foraging in breeding season	*	*	*	*	*	*	*	*	*			
Lesser frigatebird – breeding/foraging *possibly present in NWMR in non-breeding and foraging in breeding season	*	*	*	*	*	*	*	*	*			
Brown booby – presence in NWMR (breeding/foraging) Present NWMR year-round (breeding at Ashmore Reef, Adele Island, Lacepedes between January and March (protracted through to October at Ashmore Reef)												

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Species	January	February	March	April	May	June	July	August	September	October	November	December
Red-footed booby – presence in NWMR (breeding/foraging) Breed at Ashmore Reef and Adele Island, recorded breeding year-round at Ashmore Reef												
Little tern – breeding/foraging maybe present in NWMR outside breeding season – foraging and resting												
Roseate tern – breeding												
Caspian tern – breeding Dampier Archipelago and North West Cape												
Greater crested tern												
White-tailed and red-tailed tropicbird – breeding largest breeding populations on Christmas Island												
Key												
	Peak period (reliable/predictable)											
	Species present/undertaking biologically important behaviour in the NWMR											
	Species not likely to be present or undertaking biologically important behaviour in the NWMR											

1. *Biologically Important Areas (DCCEEW 2025b)*
2. *Threatened Species Scientific Committee (2015d)*
3. *Norman* et al. *(2017)*
4. *Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia 2017)*
5. *Aulich* et al. *(2022)*
6. *DSEWPaC (2012a)*
7. *Salgado Kent* et al. *(2012)*
8. *Irvine and Salgado Kent (2019)*
9. *Thums* et al. *(2018)*
10. *Cerchio* et al. *(2019)*
11. *Commonwealth of Australia (2015a)*
12. *McCauley* et al. *(2018)*
13. *Thums* et al. *(2022)*
14. *Threatened Species Scientific Committee (2015b)*
15. *All seabird seasonality information derived from BIA metadata, scientific publications and expert opinion (Worley 2024)*

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11. KEY ECOLOGICAL FEATURES

KEFs are elements of the Commonwealth marine environment that are considered important for a marine region's biodiversity or ecosystem function and integrity. The Australian Government has identified KEFs based on advice from scientists about the ecological processes and characteristics of the area.

KEFs meet one or more of the criteria of:

- a species, group of species, or a community with a regionally important ecological role; for example, a predator, or prey that affects a large biomass or number of other marine species
- a species, group of species or a community that is nationally or regionally important for biodiversity
- an area or habitat that is nationally or regionally important for:
  - enhanced or high productivity, such as predictable upwellings – an upwelling occurs when cold nutrient-rich waters from the bottom of the ocean rise to the surface
  - aggregations of marine life, such as feeding, resting, breeding or nursery areas, or
  - biodiversity and endemism (species that only occur in a specific area)
- a unique seafloor feature, with known or presumed ecological properties of regional significance.

Thirteen KEFs are designated within the NWMR, detailed in Table 11-1. Twelve KEFs are designated within the SWMR and eight within the NMR, detailed in (Appendix A).

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Table 11-1 details the 13 KEFs within the NWMR as identified by the PMST (Appendix A) and are displayed in Figure 11-1.

Table 11-1: Key ecological features within the NWMR

KEF name	Woodside activity area			Values[1]	Description
	Browse	*NWS/ Scarborough*	*North West Cape*		
Ancient coastline at 125 m depth contour	✓	✓	✓	Unique seafloor feature with ecological properties of regional significance. Provides areas of hard substrate and may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment.	Several steps and terraces as a result of Holocene sea level changes occur in the region, with the most prominent of these features occurring as an escarpment along the NWMR and Sahul Shelf at a water depth of 125 m. The ancient coastline is not continuous throughout the NWMR and coincides with a well-documented eustatic stillstand at about 130 m depth worldwide (Falkner *et al.* 2009). Where the ancient coastline provides areas of hard substrate, it may contribute to higher diversity and enhanced species richness relative to soft sediment habitat (Falkner *et al.* 2009). Parts of the ancient coastline, represented as rocky escarpment, are considered to provide biologically important habitat in an area predominantly made up of soft sediment. The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient-rich environment. Although the ancient coastline adds more habitat types to a representative system, the habitat types are not unique to the coastline as they are widespread on the upper shelf (Falkner *et al.* 2009).
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	✓	-	-	High productivity, biodiversity and aggregation of marine life that apply to both the benthic and pelagic habitats within the feature.	Ashmore Reef is the largest of only three emergent oceanic reefs in the north-eastern Indian Ocean and is the only oceanic reef in the region with vegetated islands. Ashmore contains a large reef shelf, two large lagoons, several channelled carbonate sand flats, shifting sand cays, an extensive reef flat, three vegetated islands – East, Middle and West islands – and surrounding waters. Rising from a depth of more than 100 m, the reef platform is at the edge of the NWS and covers an area of 239 km². Ashmore Reef and Cartier Island and the surrounding Commonwealth waters are regionally important for feeding and breeding aggregations of birds and other marine life; they are areas of enhanced primary productivity in an otherwise low- nutrient environment (DSEWPaC 2012a). Ashmore Reef supports the highest number of coral species of any reef off the WA coast.

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KEF name	Woodside activity area			Values[1]	Description
	Browse	*NWS/ Scarborough*	*North West Cape*		
Carbonate bank and terrace system of the Sahul Shelf	✓	-	-	Unique seafloor feature with ecological properties of regional significance. Regionally important because of their role in enhancing biodiversity and local productivity relative to their surrounds. The carbonate banks and terraces provide areas of hard substrate in an otherwise soft sediment environment, and are important for sessile species.	The carbonate banks and terrace system of the Sahul Shelf are in the western Joseph Bonaparte Gulf and north of Cape Bougainville and Cape Londonderry. The carbonate banks and terraces are part of a larger complex of banks and terraces that occurs on the Van Diemen Rise in the adjacent NMR. The bank and terrace system of the Van Diemen Rise covers about 31,278 km² and forms part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east. The feature is characterised by terrace, banks, channels and valleys (DSEWPaC 2012c). The banks, ridges and terraces of the Van Diemen Rise are raised geomorphic features with relatively high proportions of hard substrate that support sponge and octocoral gardens. These, in turn, provide habitat to other epifauna, by providing structure in an otherwise flat environment (Przeslawski *et al.* 2011). Plains and valleys are characterised by scattered epifauna and infauna that include polychaetes and ascidians. These epibenthic communities support higher order species such as olive ridley turtles, sea snakes and sharks (DSEWPaC 2012c).
Canyons linking the Argo Abyssal Plain and Scott Plateau	-	✓	-	Facilitates nutrient upwelling, creating enhanced productivity and encouraging diverse aggregations of marine life. Likely to be important due to their historical association with sperm whale aggregations.	Interactions with the Leeuwin Current and strong internal tides are thought to result in upwelling at the canyon heads, thus creating conditions for enhanced productivity in the region (Brewer *et al.* 2007). As a result, aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, predatory fishes and seabirds are known to occur in the area due to its enhanced productivity (Sleeman *et al.* 2007).
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	-	✓	Unique seafloor feature with ecological properties of regional significance. The feature creates an enhanced productivity environment, attracting aggregations of fish and higher-order consumers such as large predatory fish, sharks, toothed whales and dolphins.	The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope, Exmouth Plateau and Ningaloo Reef. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads (DSEWPaC 2012a). Aggregations of whale sharks, manta rays, sea snakes, sharks, seabirds and large predatory fish are known to occur in this area.

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KEF name	Woodside activity area			Values[1]	Description
	Browse	*NWS/ Scarborough*	*North West Cape*		
Commonwealth waters adjacent to Ningaloo Reef	-	-	✓	High productivity and diverse aggregations of marine life. The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateaus are interconnected and support the high productivity and species richness of Ningaloo Reef. Ningaloo Reef is globally significant as it is the only extensive coral reef in the world that fringes the west coast of a continent.	The Leeuwin and Ningaloo currents interact, leading to areas of enhanced productivity in the Commonwealth waters adjacent to Ningaloo Reef. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, seabirds and large predatory fish are known to occur in this area (DSEWPaC 2012a). The spatial boundary of this KEF, as defined in the Australian Marine Spatial Information System, is defined as the waters contained in the existing Ningaloo AMP provided in Section 12.5.
Continental slope demersal fish communities	✓	✓	✓	High biodiversity of demersal fish assemblages, including high levels of endemism.	The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Transition and the Northwest Province is high compared to elsewhere along the Australian continental slope (DSEWPaC 2012a). The continental slope between North West Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last *et al.* 2005). The slope of the Timor Province and the Northwest Transition also contains more than 500 species of demersal fishes, of which 64 are considered endemic (Last *et al.* 2005), making it the second richest area for demersal fishes throughout the whole continental slope. Demersal fish species occupy two distinct demersal biomes associated with the upper slope (225 to 500 m water depths) and the mid-slope (750 to 1,000 m). Although poorly known, it is suggested the demersal slope communities rely on bacteria and detritus-based systems comprised of infauna and epifauna, which in turn become prey for a range of teleost fishes, molluscs and crustaceans (Brewer *et al.* 2007). Higher-order consumers may include carnivorous fishes, deepwater sharks, toothed whales and large squid (Brewer *et al.* 2007). Pelagic production is phytoplankton-based, with hotspots around oceanic reefs and islands (Brewer *et al.* 2007)

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KEF name	Woodside activity area			Values[1]	Description
	Browse	***NWS/ Scarborough***	***North West Cape***		
Exmouth Plateau	-	✓	✓	Unique seafloor feature with ecological properties of regional significance, which apply to both benthic and pelagic habitats. Likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of about 1,000 m.	The Exmouth Plateau is a large, mid-slope, continental margin plateau that lies off the north-west coast of Australia. It ranges in depth from about 500 to more than 5,000 m and is a major structural element of the Carnarvon Basin (Miyazaki and Stagg 2013). The large size of the Exmouth Plateau and its expansive surface may modify deepwater flow and be associated with generating internal tides, both of which may subsequently contribute to the upwelling of deeper, nutrient-rich waters nearer the surface (Brewer *et al.* 2007). Satellite observations suggest productivity is enhanced along the northern and southern boundaries of the plateau (Brewer *et al.* 2007). Sediments on the plateau suggest biological communities include scavengers, benthic filter feeders and epifauna (DSEWPaC 2012a). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton attracted to seasonal upwellings, as well as larger predators such as billfishes, sharks and dolphins (Brewer *et al.* 2007). Protected and migratory species are also known to pass through the region, including whale sharks and cetaceans.
Glomar Shoal	-	✓	-	An area of high productivity and aggregations of marine life, including commercial and recreational fish species.	Glomar Shoal is a submerged littoral feature about 150 km north of Dampier on the Rowley shelf at depths of 33 to 77 m (Falkner *et al.* 2009). Studies by Abdul Wahab *et al.* (2018) found hard coral and sponge species in water depths less than 40 m. One hundred and seventy different species of fishes were detected, with greatest species richness and abundance in shallow habitats (Abdul Wahab *et al.* 2018). Fish species present include commercial and recreational species such as rankin cod, brown striped snapper, red emperor, crimson snapper, bream and yellow-spotted triggerfish (Falkner *et al.* 2009; Fletcher and Santoro 2009). These species have recorded high catch rates associated with Glomar Shoal, indicating the shoal is likely to be an area of high productivity.

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KEF name	Woodside activity area			Values[1]	Description
	Browse	*NWS/ Scarborough*	*North West Cape*		
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	-	✓	-	Regionally important in supporting high species richness, higher productivity and aggregations of marine life.	The Mermaid Reef and Commonwealth waters surrounding the KEF is adjacent to the 3 nm State waters limit surrounding Clerke Reef and Imperieuse Reef, and include the Mermaid Reef Marine Park as described in Section 12. The reefs provide a distinctive biophysical environment in the region. They have steep and distinct reef slopes and associated fish communities. In evolutionary terms, the reefs may play a role in supplying coral and fish larvae to reefs further south via the southward-flowing Indonesian Throughflow. Both coral communities and fish assemblages differ from similar habitats in eastern Australia (Done *et al*. 1994).
Pinnacles of the Bonaparte Basin	✓	-	-	Unique seafloor feature with ecological properties of regional significance. Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species. Recognised as a biodiversity hotspot for sponges. The KEF is within both the NWMR and NMR.	The Pinnacles of the Bonaparte Basin provide areas of hard substrate in an otherwise relatively featureless environment, the pinnacles are likely to support a high number of species, although a better understanding of the species richness and diversity associated with these structures is required (DSEWPaC 2012a; 2012c). Covering >520 km² within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds and foraging turtles (DSEWPaC 2012a; 2012c).
Seringapatam Reef and the Commonwealth waters in the Scott Reef complex	✓	-	-	Support diverse aggregations of marine life, have high primary productivity relative to other parts of the region, are relatively pristine and have high species richness, which apply to both the benthic and pelagic habitats within the feature.	Seringapatam Reef and the Commonwealth waters in the Scott Reef complex are regionally important in supporting the diverse aggregations of marine life, high primary productivity and high species richness associated with the reefs themselves. As two of the few offshore reefs in the north-west, they provide an important biophysical environment in the region (DSEWPaC 2012a).

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KEF name	Woodside activity area			Values[1]	Description
	Browse	***NWS/ Scarborough***	***North West Cape***		
Wallaby Saddle	-	-	✓	High productivity and aggregations of marine life, representing almost the entire area of this type of geomorphic feature in the NWMR. It is a unique habitat that neither occurs anywhere else nearby (within hundreds of kilometres) nor with as large an area (Falkner *et al.* 2009).	The Wallaby Saddle may be an area of enhanced productivity. Historical whaling records provide evidence of sperm whale aggregations in the area of the Wallaby Saddle, possibly due to the enhanced productivity of the area and aggregations of baitfish (DSEWPaC 2012a).

1. Values description sourced from Marine Bioregional Plan for the North-west Marine Region (DSEWPaC 2012a) and DCCEEW SPRAT database.

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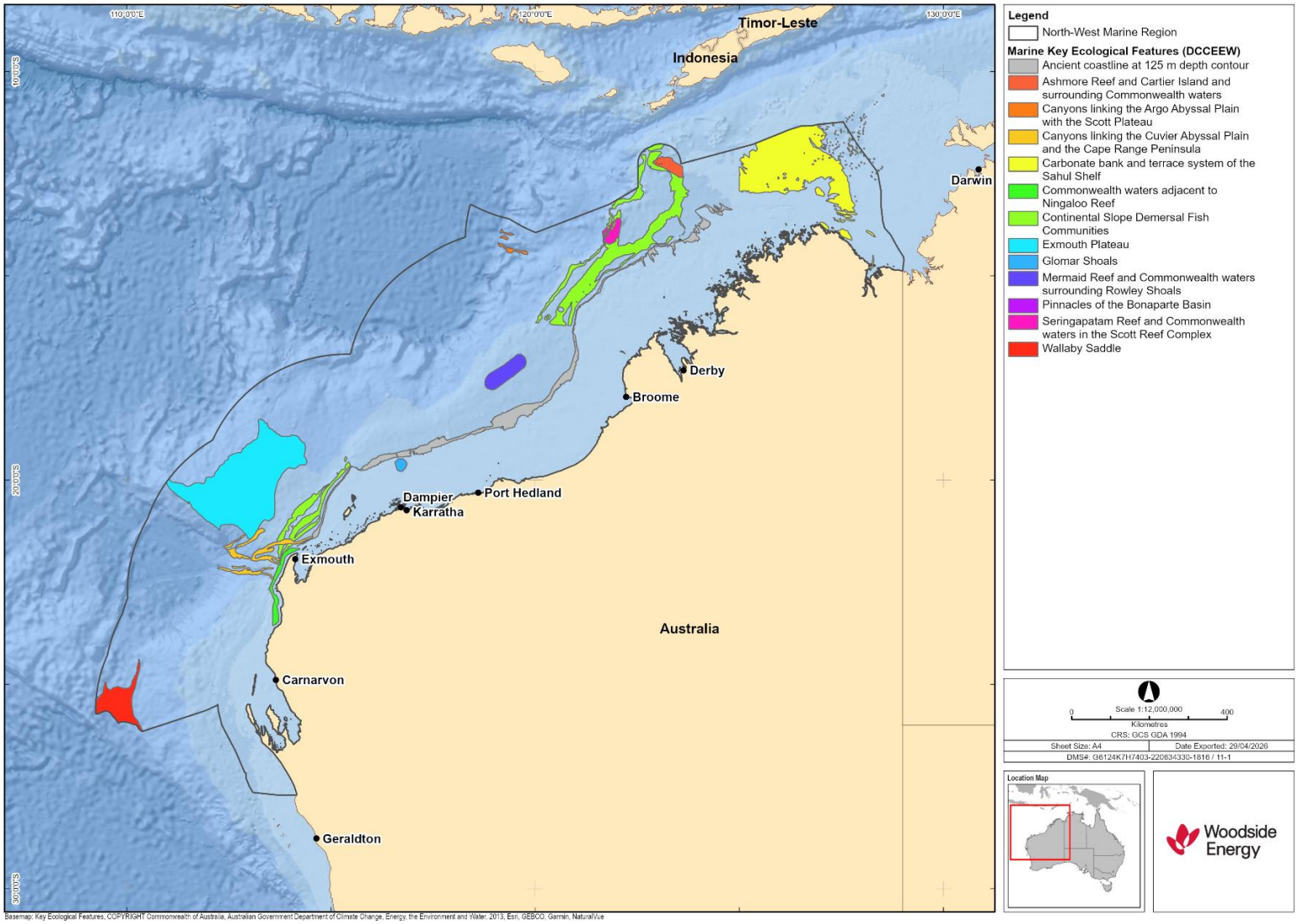


Figure 11-1: Key ecological features within the NWMR

Source: DCCEEW (2024b)

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12. PROTECTED AREAS

12.1 Regional context

Protected areas include World Heritage properties, National Heritage places, wetlands of international importance, AMPs, State marine parks and reserves, threatened ecological communities and the Australian Whale Sanctuary. The PMST Reports (Appendix A) show 30 protected areas in the NWMR, 19 in the SWMR and nine in the NMR.

12.2 World Heritage properties

World Heritage listings are sites of outstanding universal value and meet at least ten selection criteria, compiled of cultural and natural basis criteria. World Heritage listings classed as meeting outstanding natural criteria are discussed in this section and World Heritage sites classed as meeting outstanding cultural criteria are discussed in Section 13.

The list of Australia's World Heritage Properties and the PMST reports (Appendix A) show two World Heritage properties classed as natural within the NWMR (Table 12-4), and one World Heritage property classed as cultural, the Murujuga Cultural Landscape (MCL), which is described in Section 12.2.1. One World Heritage property is within the SWMR and one in the NMR (Appendix A).

Table 12-4 describes the World Heritage properties within the NWMR.

12.2.1 Murujuga Cultural Landscape World Heritage property

The MCL, within the NWMR (Figure 12-2), is globally significant and is recognised on Australia's National Heritage list and United Nations Educational, Scientific and Cultural Organization's (UNESCO) World Heritage list. The landscape encompasses one of the largest, densest and most diverse collections of rock art in the world. The area is estimated to contain over a million engravings (petroglyphs) demonstrating a broad range of styles and subjects. The landscape also boasts various archaeological sites, including quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These significant places are linked through the stories, knowledge and customs maintained by Traditional Custodians of Murujuga.

12.2.1.1 UNESCO World Heritage listing

UNESCO "seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity" via the World Heritage List, established under the World Heritage Convention 1972 (UNESCO 2024).

The MCL was nominated by the Federal Department of the Environment and Energy in 2020 and was inscribed on the UNESCO World Heritage List on 11 July 2025. This property is comprised of 99,881 ha, includes 8,356 ha of the Burrup Peninsula, 42 islands of the Dampier Archipelago and adjacent marine areas.

The outstanding universal values of the MCL World Heritage property include the following:

- Petroglyphs demonstrate artistic achievement assembled over 50,000 years. They are visually outstanding, demonstrate technical skill, and represent multiple phases in the development of regional and local styles.
- The Murujuga Cultural Landscape bears testimony to the living cultural traditions of Ngarda-Ngarli and the spiritual relationship between people and landscape that is at least 50,000 years old.
- The Murujuga Cultural Landscape is an outstanding example of human interaction with the environment over at least 50,000 years. The landscape is patterned by this long-term presence persisting through irreversible environmental and climatic changes.

The MCL is inscribed under Cultural Criterion i, iii and v, which reflect the outstanding universal values.

More information about the MCL can be found on the publicly available UNESCO World Heritage Listing[17].

[17] https://whc.unesco.org/en/list/1709

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The WA DBCA states “World Heritage listing also brings a commitment at local, state and national levels to protect and manage the property for present and future generations.” This affirms that with appropriate management, the World Heritage listing and industry could occur in parallel, as long as there are no significant impacts on World Heritage values (DBCA 2019).

12.2.1.2 Condition of Murujuga Cultural Landscape

The identified condition of the MCL has been assessed from publicly available sources:

The following is an excerpt from the World Heritage Submission for MCL (Murujuga Aboriginal Corporation (MAC), DBCA, DoEE 2020) which noted, with regards to the Statements of Integrity and/or Authenticity:

> “Aboriginal cultural landscapes are living landscapes that change as time progresses, where oral tradition is the canon of proof and where changing practices of embodied experience with landscapes grow from generation to generation (Andrews and Buggey 2008).
>
> “In the context of Aboriginal cultural landscapes, any test of authenticity must recognise, expect, and endorse changes (Andrews and Buggey 2008). The archaeological and anthropological evidence for Murujuga is well preserved, with a high degree of authenticity. The exceptionally well-preserved cultural values of Murujuga can be found across an area of more than 37,000 ha, comprising the majority of the Burrup Peninsula, as well as the surrounding islands of the Dampier Archipelago.
>
> “The petroglyphs of Murujuga have been made on the exceptionally hard, dark volcanic rock using stone tool technology. Methods of production included pecking, abrasion, incision and bas-relief. When first produced the very pale grey petroglyphs would have contrasted starkly with the dark red-brown cortex of the rock. With subsequent patination and weathering, this contrast gradually reduces…
>
> “Murujuga has a high level of integrity and received enhanced protection and management following its National Heritage listing in 2007. A detailed land-use impact study of Murujuga documented that all 40 islands included in the Dampier Archipelago (including Burrup Peninsula) National Heritage place and approximately 85 per cent of the Burrup Peninsula, retain extremely high integrity (McDonald and Veth 2006), and contain all the attributes that constitute the potential outstanding universal value of the place…
>
> “Within the National Heritage listed area, the petroglyphs are whole and intact (Jo McDonald Cultural Heritage Management 2009; 2011). Although the entirety of Murujuga has not been surveyed and recorded, there are thousands of known sites which demonstrate the potential outstanding universal value of the Murujuga Cultural Landscape…
>
> “While industrial development visually compromises some areas of the southern section of the Burrup Peninsula, the topography, with its deeply dissected gorges, valleys and scree slopes, means that a large portion of Murujuga, including the vast majority of its islands retain high visual integrity (Jo McDonald Cultural Heritage Management 2011; Australian Heritage Council 2012). In summary, the Murujuga Cultural Landscape is an intact and representative example of one of the most significant concentrations of human artistic creativity in the world, which survives through the continuity of Ngurra-ra Ngarli cultural and social practices and active management.”

A report titled The Potential Outstanding Universal Value of the Dampier Archipelago Site and Threats to that Site – A report by the Australian Heritage Council to the Minister for Sustainability, Environment, Water, Population and Communities (Australian Heritage Council 2012), found that:

> “It is clear that the undisturbed area within the boundaries of the National Heritage listed place is complete and whole, notwithstanding the proximity of industry.”

The Australian Heritage Database listing for the Nationally Heritage Listed Dampier Archipelago (including Burrup Peninsula) states:

> “Condition: Parts of the area, particularly the Burrup Peninsula, East Intercourse Island and Mid East Intercourse Island, have been subject to industrial development and other impacts such as the construction of towns and work camps. A land use impact assessment, undertaken using aerial photographs from August 2004, estimates that high levels of impact have occurred on 1,643 ha (or 16.4 square kilometres) on the Burrup Peninsula (McDonald and Veth 2006). A high level of impact in these areas on the Burrup Peninsula has resulted in the destruction of archaeological material and in some cases the relocation of engravings and other stone features. Despite this, the natural and cultural heritage in Dampier Archipelago and its surrounding waters is in good condition” (DCCEEW 2007).

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12.2.1.3 Murujuga rock art monitoring

In 2019, the WA Department of Water and Environmental Regulation (DWER) released the Murujuga Rock Art Strategy (MRAS), a "monitoring, analysis and decision-making framework to protect Aboriginal rock art located on Murujuga (the Dampier Archipelago and Burrup Peninsula)" (DWER 2019). The MRAS notes "This strategy builds on the previous work on Murujuga to deliver a scientifically rigorous approach to monitoring, analysis and management that will provide an appropriate level of protection to the rock art. It describes a risk-based approach for the management of impacts to the rock art that is consistent with the State Government's responsibilities under the *Environmental Protection Act 1986* (EP Act) and provides the monitoring and analysis to determine whether accelerated change is occurring to the petroglyphs" (DWER 2019).

The results from these studies will guide management and protection of the rock art" (Government of Western Australia 2023). The MRAS states that "The successful implementation of the management framework to protect the rock art from anthropogenic emissions will require…a monitoring program that is appropriately designed and implemented to take the necessary measurements, to analyse the data and to report on the integrity or condition of the rock art and change in that condition" (DWER 2019). As described in the MRAS, "The Western Australian Government in partnership with MAC and in consultation with international and national experts in relevant disciplines and the Murujuga Rock Art Stakeholder Reference Group, will develop and implement a revised long-term Murujuga Rock Art Monitoring Program" (DWER 2019).

The Murujuga Rock Art Monitoring Program (MRAMP) is a five-year program run by MAC and DWER, is described as a "best practice monitoring and analysis program" by the Government of Western Australia, which "will provide reliable information about changes and trends in the condition of the rock art and whether the rock art is showing signs of accelerated change. In 2025, MRAMP published interim environmental quality criteria that set the initial levels of airborne substances that are considered to not cause harm to rock art (Curtin University 2025). Interim standards published by MRAMP indicated that activities in the region currently remain below this value. Interim Environmental Quality Criteria Guidelines exist to guide an ongoing management approach under the MRAMP framework for the region.

More information about the MRAS and MRAMP can be found on the Government of Western Australia publicly available website.[18]

12.2.1.4 *Aboriginal and Torres Strait Islander Heritage Protection Act* section 10 (Murujuga) declaration

The (Murujuga) Declaration 2025 was issued on 12 September 2025 under section 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth) to provide additional Commonwealth protection for areas of the MCL, specifically on the Burrup Peninsula and Dampier Archipelago (DCCEEW 2025f). The declaration comes into force 12 months after its issue (12 September 2026).

The declaration allows the Minister for Environment and Water (the Minister) to intervene when an area of Aboriginal significance is considered under threat of injury or desecration. The Minister determined that Murujuga is a *significant Aboriginal area* and is subject to a range of threats, including those arising from existing and proposed industrial development, access arrangements, and indirect impacts on heritage values. The original application included a broader area for protection; a partial declaration was issued covering certain defined *declared areas.* These declared areas include Woodside-operated onshore leases. The prohibitions in the declaration do not apply where a person has prior written agreement from MAC to undertake certain activities (DCCEEW 2025f).

The statement about making the section 10 (Murujuga) Declaration is available on DCCEEW's webpage.[19]

12.3 National and Commonwealth Heritage places

The National Heritage List (DCCEEW 2026a) is Australia's list of natural, historic and Indigenous places of outstanding significance to the nation. The National Heritage List Spatial Database (DCCEEW 2026e) describes the place name, class (Indigenous, natural, historic) and status of the heritage places.

[18] Murujuga rock art strategy

[19] Statement about the making of a partial declaration under section 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth) in relation to parts of Murujuga, Western Australia

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Commonwealth Heritage places are a collection of sites recognised for their Indigenous, historical or natural values and are owned or controlled by the Australian Government.

A search of the National Heritage List Spatial Database and the PMST reports (Appendix A) identified six National Heritage places in the NWMR (Table 12-4), four in the SWMR and two in the NMR (Appendix A). A search of the Commonwealth Heritage List identified seven Commonwealth Heritage places within the NWMR (Table 12-4) and six within the SWMR (Appendix A). Four Commonwealth Heritage places are listed within the NMR (Appendix A).

Table 12-4 describes National and Commonwealth Heritage places within the NWMR.

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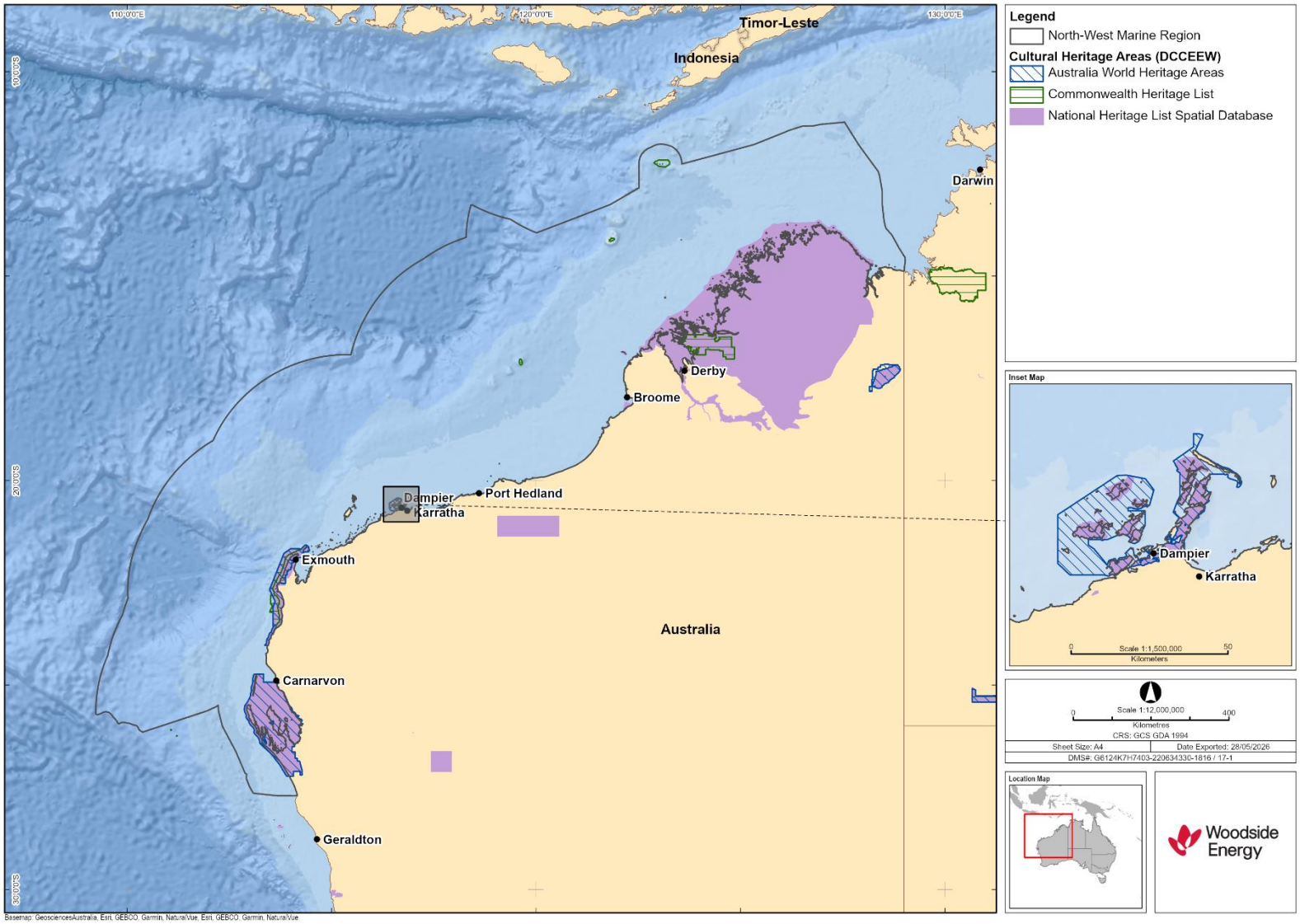


Figure 12-1: World Heritage properties and National and Commonwealth Heritage listed places in the NWMR

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12.4 Wetlands of international importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million hectares. Ramsar wetlands are those that are representative, rare or unique wetlands, or that are important for conserving biological diversity.

The List of Wetlands of International Importance held under the Ramsar Convention and the PMST reports (Appendix A) identified four Ramsar sites with coastal features within the NWMR (Table 12-4). There are five Ramsar sites within the SWMR (Appendix A) and two within the NMR in the PMST report (Appendix A).

Table 12-4 describes Ramsar wetlands within the NWMR.

12.5 Australian Marine Parks

AMPs, proclaimed under the EPBC Act in 2007 and 2013, are in Commonwealth waters from the outer edge of State and Territory waters (3 nm) to the outer boundary of Australia's EEZ 200 nm from the shore.

PMST reports (Appendix A) identified 16 AMPs within the NWMR, ten within the SWMR and eight within the NMR.

There are also two AMPs in the Indian Ocean territories. These are the Cocos (Keeling) Islands Marine Park and the Christmas Island Marine Park (Table 12-2) (Commonwealth of Australia 2021). Section 12.5.2 describes these further.

Table 12-1 describes the values of all marine parks identified in the North-west Marine Network management plans.

12.5.1 North-west Marine Parks Network

Table 12-1 describes AMPs within the North-west Marine Park Network, according to the North-west Marine Parks Network Management Plan 2018 (Director of National Parks (DNP) 2018a).

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Table 12-1: Summary of Australian Marine Parks in the North-west Marine Park Network

North-west Marine Park Network	IUCN zones	Description and values
Argo-Rowley Terrace Marine Park	National Park (II) Multiple Use (VI) Special Purpose Zone (Trawl) (VI)	**Description** The Argo–Rowley Terrace Marine Park is about 270 km north-west of Broome, WA, and extends to the limit of Australia's EEZ. This AMP covers an area of 146,003 km² and water depths between 220 m and 6,000 m, protecting ecological communities in the deep offshore region. The AMP provides connectivity between the Mermaid Reef Marine Park and WA Rowley Shoals Marine Park. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Argo-Rowley Terrace Marine Park on 9 October 2017.
		Natural values The marine park includes ecosystems representative of: • Northwest Transition – an area of shelf break, continental slope and most of the Argo Abyssal Plain; key topographic features include Mermaid, Clerke and Imperieuse reefs • Timor Province – an area dominated by warm, nutrient-poor waters; canyons are an important feature in this area of the marine park and are generally associated with high productivity and aggregations of marine life. KEFs are: • canyons linking the Argo Abyssal Plain with the Scott Plateau • Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The marine park includes a range of seafloor features such as canyons on the slope between the Argo Abyssal Plain, Rowley Terrace and Scott Plateau. These are believed to be up to 50 million years old and are associated with small, periodic upwellings that results in localised higher levels of biological productivity. The marine park includes species listed under the EPBC Act. BIAs within the marine park include resting and breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. As noted in the North-west Marine Park Management Plan, limited information regarding the cultural significance of this marine park is currently available (DNP 2018a).
		Heritage values There are no International, Commonwealth or National Heritage listings relevant to the Argo-Rowley Terrace Marine Park. The marine park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976*: Alfred (wrecked in 1908) and Pelsart (wrecked in 1908).
		Social and economic values Socioeconomic values of this marine park include commercial fishing and mining.

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North-west Marine Park Network	IUCN zones	Description and values
Ashmore Reef Marine Park	Sanctuary (Ia) Recreational Use (IV)	**Description** The Ashmore Reef Marine Park is about 630 km north of Broome and 110 km south of the Indonesian island of Roti. The marine park is in Australia's External Territory of Ashmore and Cartier islands. It is within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box. The marine park covers an area of 583 km² and water depths from less than 15 m to 500 m. The marine park was originally proclaimed under the *National Parks and Wildlife Conservation Act 1975* on 16 August 1983 as the Ashmore Reef National Nature Reserve, and proclaimed under the EPBC Act on 14 December 2013 and renamed Ashmore Reef Marine Park on 9 October 2017.
		Natural values The Ashmore Reef Marine Park includes ecosystems representative of the Timor Province – a bioregion with a depth range from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. Ashmore Reef is an important feature of the bioregion. There are two distinct demersal fish communities: one on the upper slope, the other mid slope. The marine environment includes two extensive lagoons, sand flats, shifting sand cays, extensive reef flat and large areas of seagrass. The reef ecosystems are comprised of hard and soft corals, gorgonians, sponges and a range of encrusting organisms, with the highest number of coral species of any reef off the WA coast. This marine park supports a range of species listed under the EPBC Act. BIAs within the marine park include breeding, foraging and resting habitat for seabirds, resting and foraging habitat for migratory shorebirds, foraging, mating, nesting and internesting habitat for marine turtles, foraging habitat for dugongs, and a migratory pathway for pygmy blue whales. The Ashmore Reef Ramsar site includes the largest of the atolls in the region. West Island, Middle Island and East Island represent the only vegetated islands in the region. The site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugongs, and has the highest diversity of hermatypic (reef-building) corals on the WA coast. It is known for its abundance and diversity of sea snakes, although populations at Ashmore Reef have been in decline since 1998. KEFs are: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters • continental slope demersal fish communities – an area of high-diversity demersal fish assemblages.
		Cultural values Sea Country is valued for Indigenous Australians' cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. As noted in the North-west Marine Park Management Plan, there is limited information about the cultural significance of this marine park (DNP 2018a). This marine park is valued in Indonesian culture as it contains Indonesian artefacts and grave sites. Ashmore Lagoon is still accessed as a rest or staging area for traditional Indonesian fishers travelling to and from fishing grounds within the MoU Box.
		Heritage values Ashmore Reef is a Commonwealth Heritage listed site, meeting criteria A, B and C.

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North-west Marine Park Network	IUCN zones	Description and values
		Social and economic values Tourism, recreation and scientific research are important activities in this marine park.
Carnarvon Canyon Marine Park	Habitat Protection (IV)	**Description** The Carnarvon Canyon Marine Park is about 300 km north-west of Carnarvon. It covers an area of 6,177 km² and a water depth range of 1,500 to 6,000 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Carnarvon Canyon Marine Park on 9 October 2017.
		Natural values This marine park includes ecosystems representative of the Central Western Transition – a bioregion characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities. It includes the Carnarvon Canyon, a single-channel canyon covering the entire depth range of this marine park. Ecosystems of this marine park are influenced by tropical and temperate currents, deepwater environments and proximity to the continental slope and shelf. The soft-bottom environment at the base of the Carnarvon Canyon is likely to support deep seafloor species, such as holothurians, polychaetes and sea-pens. This marine park supports a range of species listed under the EPBC Act.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years.
		Heritage values No International, Commonwealth or National Heritage listings apply to the marine park.
		Social and economic values Commercial fishing is an important activity in the marine park.
Cartier Island Marine Park	Sanctuary (Ia)	**Description** The Cartier Island Marine Park is about 45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome, WA. Both marine parks are in Australia's External Territory of Ashmore and Cartier islands and within an area subject to an MoU between Indonesia and Australia, known as the MoU Box. The Cartier Island Marine Park covers an area of 172 km² and water depths from less than 15 m to 500 m. The marine park was originally proclaimed under the *National Parks and Wildlife Conservation Act* on 21 June 2000 as the Cartier Island Marine Reserve. It was then proclaimed under the EPBC Act on 14 December 2013 and renamed Cartier Island Marine Park on 9 October 2017.

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North-west Marine Park Network	IUCN zones	Description and values
		Natural values This marine park includes ecosystems representative of the Timor Province – a bioregion with depths ranging from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. The reefs and islands of this bioregion are regarded as biodiversity hotspots. KEFs are: • Ashmore Reef and Cartier Island and surrounding Commonwealth waters • continental slope demersal fish communities. There are two distinct demersal fish communities of the continental slope: one on the upper slope, the other mid slope. This marine park includes an unvegetated sand island (Cartier Island), mature reef flat, a small, submerged pinnacle (Wave Governor Bank), and two shallow pools north-east of the island. It is also an area of high diversity and abundance of hard and soft corals, gorgonians (sea fans), sponges and a range of encrusting organisms. The reef crests are generally algal dominated, while the reef flats feature ridges of coral rubble and large areas of seagrass. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding and foraging habitat for seabirds, internesting, nesting and foraging habitat for marine turtles, and foraging habitat for whale sharks. This marine park is internationally significant for its abundance and diversity of sea snakes.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. As noted in the North-west Marine Park Management Plan, there is limited information about the cultural significance of this marine park (DNP 2018a).
		Heritage values This marine park contains one known shipwreck listed under the *Historic Shipwrecks Act:* the Ann Millicent (wrecked in 1888). No International or National Heritage listings apply to this marine park.
		Social and economic values Scientific research is an important activity in this marine park.
Dampier Marine Park	National Park (II) Habitat Protection (IV)	**Description** The Dampier Marine Park is about 10 km north-east of Cape Lambert and 40 km from Dampier, extending from the WA State water boundary. This marine park covers an area of 1,252 km² and a water depth range between less than 15 m and 70 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Dampier Marine Park on 9 October 2017.

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North-west Marine Park Network	IUCN zones	Description and values
	Multiple Use (VI)	**Natural values** This marine park includes ecosystems representative of the Northwest Shelf Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding and foraging habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for humpback whales.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Ngarluma, Yindjibarndi, Yaburara and Mardudhunera people have responsibilities for Sea Country in this marine park. The native title holders for these peoples are represented by the Ngarluma Aboriginal Corporation and Yindjibarndi Aboriginal Corporation. These Prescribed Bodies Corporate represent Traditional Owners with native title over coastal areas adjacent to this marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara and Yamatji regions.
		Heritage values No International, Commonwealth or National Heritage listings apply to this marine park, but the marine park is about 10 km north of the Dampier Archipelago (including Burrup Peninsula) National Heritage listing, which has significant Indigenous heritage values. including rock art sites.
		Social and economic values Port activities, commercial fishing and recreation, including fishing, are important activities in this marine park.
Eighty Mile Beach Marine Park	Multiple Use (VI)	**Description** The Eighty Mile Beach Marine Park is about 74 km north-east of Port Hedland, adjacent to the WA Eighty Mile Beach Marine Park. This marine park covers an area of 10,785 km² and water depth ranges between less than 15 m and 70 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Eighty Mile Beach Marine Park on 9 October 2017.
		Natural values This marine park includes examples of ecosystems representative of the Northwest Shelf Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding, foraging and resting habitat for seabirds, internesting and nesting habitat for marine turtles, foraging, nursing and pupping habitat for sawfish, and a migratory pathway for humpback whales.

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North-west Marine Park Network	IUCN zones	Description and values
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Sea Country of the Nyangumarta, Karajarri and Ngarla people extends into the Eighty Mile Beach Marine Park. Sea Country is culturally significant and important to their identity. They have an unbroken, deep spiritual connection to their Sea Country, with traditional practices continuing today. Staple foods of living cultural value for the Nyangumarta, Karajarri and Ngarla people include saltwater fish, turtles, dugongs, crabs and oysters. Access to Sea Country by families is important for cultural traditions, livelihoods and future socioeconomic development opportunities. The native title holders for the Nyangumarta, Karajarri and Ngarla people are represented by the Karajarri Aboriginal Corporation, Nyangumarta Karajarri Aboriginal Corporation, Nyangumarta Warrarn Aboriginal Corporation and Wanparta Aboriginal Corporation. These Prescribed Body Corporates represent Traditional Owners with native title over coastal area adjacent to the marine park. They are the points of contact for their respective areas of responsibility for Sea Country in the marine park. The Kimberley Land Council and the Yamatji Marlpa Aboriginal Corporation are the Native Title Representative Bodies for the Kimberley and Pilbara regions.
		Heritage values This marine park contains three known shipwrecks listed under the *Historic Shipwrecks Act:* Lorna Doone (wrecked in 1923), Nellie (wrecked in 1908) and Tifera (wrecked in 1923). No International, Commonwealth or National Heritage listings apply to the marine park.
		Social and economic values Tourism, commercial fishing, pearling and recreation are important activities in this marine park.
Gascoyne Marine Park	National Park (II) Habitat Protection (IV) Multiple Use (VI)	**Description** The Gascoyne Marine Park is about 20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Reef Marine Park and the WA Ningaloo Marine Park, and extends to the limit of Australia's EEZ. This marine park covers an area of 81,766 km² and water depth varies between 15 m and 6,000 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Gascoyne Marine Park on 9 October 2017.

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North-west Marine Park Network	IUCN zones	Description and values
		Natural values This marine park includes ecosystems representative of: • Central Western Shelf Transition – continental shelf with water depths up to 100 m, and a significant transition zone between tropical and temperate species • Central Western Transition – characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species • Northwest Province – an area of continental slope comprising diverse and endemic fish communities. KEFs are: • canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula • Commonwealth waters adjacent to Ningaloo Reef • continental slope demersal fish communities • Exmouth Plateau. Ecosystems represented in this marine park are influenced by the interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Gnulli people have responsibilities for Sea Country in this marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.

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North-west Marine Park Network	IUCN zones	Description and values
		Heritage values *World Heritage* The Ningaloo Coast was listed as an area of outstanding universal value under the World Heritage Convention in 2011, meeting World Heritage listing criteria vii and x. The Ningaloo Coast World Heritage property is adjacent to the marine park. *Commonwealth Heritage* The Ningaloo Marine Area (Commonwealth waters) meets the Commonwealth Heritage listing criteria A, B and C. The Ningaloo Marine Area is adjacent to the marine park. *National Heritage* The Ningaloo Coast meets the National Heritage listing criteria A, B, C, D, and F and is adjacent to the marine park. *Historic shipwrecks* The marine park contains more than five known shipwrecks listed under the *Historic Shipwrecks Act*.
		Social and economic values Commercial fishing, mining and recreation are important activities in this marine park.
Joseph Bonaparte Gulf Marine Park	Multiple Use Zone (VI) Special Purpose Zone (VI) (NMR only)	**Description** The Joseph Bonaparte Gulf Marine Park is about 15 km west of Wadeye, NT, and about 90 km north of Wyndham, WA, in the Joseph Bonaparte Gulf. It is adjacent to the WA North Kimberley Marine Park. This marine park covers an area of 8,597 km² and water depth ranges between less than 15 m and 100 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Joseph Bonaparte Gulf Marine Park on 9 October 2017.
		Natural values This marine park includes examples of ecosystems representative of the Northwest Shelf Transition – a dynamic environment influenced by strong tidal currents, monsoonal winds, cyclones and wind-generated waves. The large tidal ranges and wide intertidal zones near this marine park create a physically dynamic and turbid marine environment. The KEF in this marine park is the carbonate bank and terrace system of the Sahul Shelf – characterised by terraces, banks, channels and valleys supporting sponges, soft corals, sessile filter feeders, polychaetes and ascidians. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include foraging habitat for marine turtles and the Australian snubfin dolphin.

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North-west Marine Park Network	IUCN zones	Description and values
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Miriuwung, Gajerrong, Doolboong, Wardenybeng and Gija and Balangarra people have responsibilities for Sea Country in this marine park. They are represented by the following Prescribed Bodies Corporate: Miriuwung and Gajerrong Aboriginal Corporation and Balanggarra Aboriginal Corporation. These corporations are the points of contact for their respective areas of Sea Country in this marine park. The Northern Land Council and the Kimberley Land Council are the Native Title Representative Bodies for the NT's northern region and the Kimberley region, respectively.
		Heritage values No International, Commonwealth or National Heritage listings apply to this marine park, but this marine park is adjacent to the West Kimberley National Heritage place.
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in this marine park.
Kimberley Marine Park	Habitat Protection (IV) National Park (II) Multiple Use (VI)	**Description** The Kimberley Marine Park is about 100 km north of Broome, extending from the WA State water boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville. This marine park is adjacent to the WA Lalang-garram/Camden Sound Marine Park and the North Kimberley Marine Park. This marine park covers an area of 74,469 km² and water depths from less than 15 m to 800 m. **The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Kimberley Marine Park on 9 October 2017.**
		Natural values This marine park includes ecosystems representative of: • Northwest Shelf Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and an ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. • Northwest Shelf Transition – straddles the NWMR and NMR and in the north-west includes shelf break, continental slope and most of the Argo Abyssal Plain, and is subject to a high incidence of cyclones. Benthic biological communities in the deeper parts of the bioregion have not been extensively studied, although high levels of species diversity and endemism occur among demersal fish communities on the continental slope. • Timor Province – water depths (of the bioregion) range from about 200 m near the shelf break to 5,920 m over the Argo Abyssal Plain. The reefs and islands of the bioregion are regarded as biodiversity hotspots. Endemism in demersal fish communities of the continental slope is high; two distinct communities have been identified on the upper and mid slopes. KEFs are: • ancient coastline at the 125 m depth contour

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North-west Marine Park Network	IUCN zones	Description and values
		• continental slope demersal fish communities. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding and foraging habitat for seabirds, internesting and nesting habitat for marine turtles, breeding, calving and foraging habitat for inshore dolphins, calving, migratory pathway and nursing habitat for humpback whales, migratory pathway for pygmy blue whales, foraging habitat for dugongs, and foraging habitat for whale sharks.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people's Sea Country extends into the Kimberley Marine Park. The Wunambal Gaambera people's country includes daagu (deep waters), with about 3,400 km² of their Sea Country in this marine park. The Wunambal Gaambera, Dambimangari, Mayala, Bardi Jawi and the Nyul Nyul people have an unbroken connection to their Sea Country, having deep spiritual connection through wunggurr (creator snakes) that still live in the sea. Staple foods of living cultural value include saltwater fish, turtles, dugongs, crabs and oysters. Access to Sea Country by families is important for cultural traditions, livelihoods and future socioeconomic development opportunities. The National Heritage listing for the West Kimberley recognises the following key cultural heritage values: • Wanjina Wunggurr cultural tradition, which incorporates many Sea Country cultural sites • log-raft maritime tradition, which involved using tides and currents to access warrurru (reefs) far offshore to fish • interactions with Makassan traders around sea foods over hundreds of years • important pearl resources that were used in traditional trade through the wunan and in contemporary commercial agreements. The Wunambal Gaambera, Dambimangari and Bardi Jawi people consider that these values extend into the Kimberley Marine Park. The Wanjina Wunggurr is law of the Wunambal Gaambera and Dambimangari people and it is recognised all the Sea Country, land, plants and animals were put there by Wanjina Wunggurr. Under Wanjina Wunggurr law, the Wunambal Gaambera and Dambimangari people have a responsibility to manage Country, to maintain the health of the Country and all living things. The Wunambal Gaambera, Bardi Jawi, Mayala and the Nyul Nyul people have had native title determined over parts of their Sea Country included in this marine park. The native title holders for these people are represented by the Wunambal Gaambera Aboriginal Corporation, Bardi and Jawi Niimidiman Aboriginal Corporation and the Kimberley Land Council. These representative bodies are the points of contact for their respective areas of Sea Country for this marine park. The Kimberley Land Council is the Native Title Representative Body for the Kimberley region.
		Heritage values This marine park contains more than 40 known shipwrecks listed under the *Historic Shipwrecks Act*. No International, Commonwealth or National Heritage listings apply to the marine park, but the marine park is adjacent to the National Heritage place of the West Kimberley.

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North-west Marine Park Network	IUCN zones	Description and values
		Social and economic values Tourism, commercial fishing, mining, recreation, including fishing, and traditional use are important activities in this marine park.
Mermaid Reef Marine Park	National Park (II)	**Description** The Mermaid Reef Marine Park is about 280 km north-west of Broome, adjacent to the Argo-Rowley Terrace Marine Park and about 13 km from the WA Rowley Shoals Marine Park. This marine park covers an area of 540 km² and water depths from less than 15 m to 500 m. Mermaid Reef is one of three reefs forming the Rowley Shoals. The reefs of the Rowley Shoals are significant as they are considered ecological stepping stones for reef species originating in Indonesian/Western Pacific waters, are one of a few offshore reef systems on the NWS, and may provide an upstream source for recruitment to reefs further south. The marine park was originally proclaimed under the *National Parks and Wildlife Conservation Act* on 10 April 1991 as the Mermaid Reef Marine National Nature Reserve and proclaimed under the EPBC Act on 14 December 2013 and renamed Mermaid Reef Marine Park on 9 October 2017.
		Natural values This marine park includes examples of ecosystems representative of the Northwest Transition – an area of shelf break, continental slope, and most of the Argo Abyssal Plain. Together with Clerke Reef and Imperieuse Reef, Mermaid Reef is a biodiversity hotspot and key topographic feature of the Argo Abyssal Plain. A KEF of this marine park is the Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals. Ecosystems of this marine park are associated with emergent reef flat, deep reef flat, lagoon, and submerged sand habitats. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. As noted in the North-west Marine Park Management Plan, there is limited information about the cultural significance of this marine park (DNP 2018a).
		Heritage values No International or National Heritage listings apply to this marine park. Mermaid Reef-Rowley Shoals was established on the Commonwealth Heritage List in 2004, meeting Commonwealth Heritage listing criteria A, B, C and D. This marine park contains one known shipwreck listed under the *Historic Shipwrecks Act*: Lively (wrecked in 1810).
		Social and economic values Tourism, recreation and scientific research are important activities in this marine park.

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North-west Marine Park Network	IUCN zones	Description and values
Montebello Marine Park	Multiple Use (VI)	**Description** The Montebello Marine Park is offshore of Barrow Island and 80 km west of Dampier, extending from the WA State waters boundary, and is adjacent to the WA Barrow Island and Montebello Islands marine parks. This marine park covers an area of 3,413 km² and water depths from less than 15 m to 150 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Montebello Marine Park on 9 October 2017.
		Natural values This marine park includes examples of ecosystems representative of the Northwest Shelf Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities. A KEF of this marine park is the ancient coastline at 125 m depth contour. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding habitat for seabirds, internesting, foraging, mating and nesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat for whale sharks. The marine park contains important breeding grounds for four turtle species: flatback, green, hawksbill and loggerhead turtles.
		Cultural values The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Pilbara region. Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. As noted in the North-west Marine Park Management Plan, there is limited information about the cultural significance of this marine park (DNP 2018a).
		Heritage values No International, Commonwealth or National listings apply to this marine park, but this marine park is adjacent to the WA Barrow Island and the Montebello–Barrow Island Marine Conservation Reserves, which have been nominated for National Heritage listing. This marine park contains two known shipwrecks listed under the *Historic Shipwrecks Act*: Trial (wrecked in 1622), the earliest known shipwreck in Australian waters, and Tanami (unknown date).
		Social and economic values Tourism, commercial fishing, mining and recreation are important activities in this marine park.

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North-west Marine Park Network	IUCN zones	Description and values
Ningaloo Marine Park	National Park (II) Recreational Use (IV)	**Description** The Ningaloo Marine Park stretches about 300 km along the west coast of the Cape Range Peninsula, and is adjacent to the WA Ningaloo Marine Park and Gascoyne Marine Park. This marine park covers an area of 2,435 km² and a water depth range of 30 m to more than 500 m. This marine park provides connectivity between deeper offshore waters of the shelf break and coastal waters of the adjacent WA Ningaloo Marine Park. It includes some of the most diverse continental slope habitats in Australia, including the continental slope area between North West Cape and the Montebello Trough. Canyons in this marine park are important for sustaining the nutrient conditions that support the high diversity of Ningaloo Reef. The marine park was originally proclaimed under the *National Parks and Wildlife Conservation Act* on 20 May 1987 as the Ningaloo Marine Park (Commonwealth waters) and proclaimed under the EPBC Act on 14 December 2013 and renamed Ningaloo Marine Park on 9 October 2017.
		Natural values This marine park includes examples of ecosystems representative of: • Central Western Shelf Transition – continental shelf of water depths up to 100 m, and a significant transition zone between tropical and temperate species • Central Western Transition – characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species • Northwest Province – an area of continental slope comprising diverse and endemic fish communities • Northwest Shelf Province – a dynamic environment, influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. KEFs are: • canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula • Commonwealth waters adjacent to Ningaloo Reef • continental slope demersal fish communities. Ecosystems represented in this marine park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent and the Ningaloo Current. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding and foraging habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, foraging habitat and migratory pathway for pygmy blue whales, breeding, calving, foraging and nursing habitat for dugongs, and foraging habitat for whale sharks.

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North-west Marine Park Network	IUCN zones	Description and values
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Gnulli people have responsibilities for Sea Country in this marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values *World Heritage* This marine park is within the Ningaloo Coast World Heritage property, meeting World Heritage listing criteria vii and x. The area is valued for high terrestrial species endemism, marine species diversity and abundance, and the interconnectedness of large-scale marine, coastal and terrestrial environments. The area connects the limestone karst system and fossil reefs of the ancient Cape Range to the nearshore reef system of Ningaloo Reef, to the continental slope and shelf in Commonwealth waters. *National Heritage* The Ningaloo Coast overlaps this marine park, meeting the national heritage listing criteria A, B, C, D, and F. *Commonwealth Heritage* The Ningaloo Marine Area (Commonwealth waters) meets Commonwealth Heritage listing criteria A, B and C. The Ningaloo Marine Area overlaps this marine park. *Historic shipwrecks* This marine park contains more than 15 known shipwrecks listed under the *Historic Shipwrecks Act*.
		Social and economic values Tourism and recreation, including fishing, are important activities in this marine park.
Roebuck Marine Park	Multiple Use (VI)	**Description** The Roebuck Marine Park is about 12 km offshore of Broome and is adjacent to the WA Yawuru Nagulagun/Roebuck Bay Marine Park. This marine park covers an area of 304 km² and a water depth range of less than 15 m to 70 m. This marine park is adjacent to the Roebuck Bay Ramsar site, recognised as one of the most important areas for migratory shorebirds in Australia; and the WA Yawuru Nagulagun/Roebuck Bay Marine Park, providing connectivity between offshore and inshore coastal waters of Roebuck Bay. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Roebuck Marine Park on 9 October 2017.

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North-west Marine Park Network	IUCN zones	Description and values
		Natural values This marine park includes examples of ecosystems representative of the Northwest Shelf Province – a dynamic environment influenced by strong tides, cyclonic storms, long-period swells and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important seafloor feature and migratory pathway for humpback whales. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding and resting habitat for seabirds, foraging and internesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat for dugongs.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. Yawuru people have always recognised the waters of Roebuck Bay as nagula (Yawuru Sea Country), and have customary responsibilities to care for it. They have a deep spiritual connection to offshore landscapes from bugarrigarra (creator beings), and believe snake-like metaphysical beings inhabit the sea. Cultural sites in Sea Country are also a source of law. The Yawuru people harvest marine resources according to the six Yawuru seasons. They have harvested pearl shell for food and cultural purposes. Fish are a staple food source, and fishing a form of cultural expression, connecting people to their Country, modelled on tradition and based in traditional law. Access to Sea Country by families is important to cultural traditions, livelihoods and future socioeconomic development opportunities. The Yawuru Native Title Holders Aboriginal Corporation is the Prescribed Body Corporate representing Traditional Owners with native title over coastal areas adjacent to this marine park, and is the point of contact for Sea Country in this marine park. The Kimberley Land Council is the Native Title Representative Body for the Kimberley region.
		Heritage values No international, Commonwealth or national listings apply to the marine park, but it is adjacent to the West Kimberley National Heritage place.
		Social and economic values Tourism, commercial fishing, pearling and recreation, including fishing, are important activities that occur in the marine park.

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North-west Marine Park Network	IUCN zones	Description and values
Shark Bay Marine Park	Multiple Use (VI)	**Description** The Shark Bay Marine Park is about 60 km offshore of Carnarvon, adjacent to the Shark Bay World Heritage property and National Heritage place. This marine park covers an area of 7,443 km², extending from the WA State water boundary, and a water depth range between 15 m and 220 m. The marine park was proclaimed under the EPBC Act on 14 December 2013 and renamed Shark Bay Marine Park on 9 October 2017.
		Natural values This marine park includes examples of ecosystems representative of: • Central Western Shelf – a predominantly flat, sandy and low-nutrient area, in water depths 50 to 100 m; the bioregion is a transitional zone between tropical and temperate species • Central Western Transition – characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species. Ecosystems represented in this marine park are influenced by the Leeuwin, Ningaloo and Capes currents. This marine park supports a range of species listed under the EPBC Act. BIAs within this marine park include breeding habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for humpback whales. This marine park and adjacent coastal areas are also important for shallow-water snapper.
		Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Gnulli and Malgana people have responsibilities for Sea Country in this marine park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region.
		Heritage values no international, commonwealth or national heritage listings apply to this marine park, but this marine park is adjacent to the Shark Bay World Heritage property and Shark Bay National Heritage place. The marine park contains about 20 known shipwrecks listed under the *Historic Shipwrecks Act*.
		Social and economic values Tourism, commercial fishing, mining and recreation, including fishing, are important activities in the marine park.

Source: DNP, 2018a

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12.5.2 Commonwealth Marine Parks within Indian Ocean territory

Table 12-2 describes the values of the Indian Ocean territory AMPs according to the Christmas Island Marine Park Management Plan (DNP 2025a) and the Cocos (Keeling) Islands Marine Park Management Plan (DNP 2025b).

Table 12-2: Summary of Australian Marine Parks within Indian Ocean territories

Indian Ocean territory marine park	IUCN zones	Values
Christmas Island Marine Park (DNP 2025a)	National Park (II) Habitat Protection (IV)	**Description** Christmas Island Marine Park covers an area of 277,016 km² and extends from the island's shoreline to the limit of Australia's Exclusive Economic Zone, about 200 nm from shore (except to the north of Christmas Island). This marine park adjoins the marine boundary of Christmas Island National Park, which extends 50 m seaward from the island. Almost all the island's port is excluded from this marine park, except for a very small and narrow part of the port's western boundary.
		Natural values The tropical waters and fringing coral reefs that surround Christmas Island contain a mix of coral reef species from both the Indian and Pacific oceans; over 680 species of fish have been recorded in the region. The overlap of these waters gives rise to varieties of hybrid marine fish and some endemic species. Christmas Island also has the world's greatest diversity and abundance of land crabs. The island's waters are essential for the crabs, as they migrate to the coast to breed and release their eggs into the ocean. This marine park contains a range of unique seafloor features, habitats and species, particularly seamounts and deep-sea plains. BIAs include foraging areas for the endemic Abbott's booby, Christmas Island frigatebird and golden bosun and other seabirds that nest on Christmas Island, as well as whale shark feeding areas and southern bluefin tuna breeding habitat. Christmas Island includes rainforests, surrounding clear azure waters, and marine and terrestrial habitats and species of international conservation significance.
		Cultural values The ocean is a centrepiece of life for many community members of Christmas Island, including those of Malay and Chinese heritage who maintain strong cultural traditions and connections to the surrounding marine environment. History of the land has been passed down through generations through historical and cultural stories.
		Heritage values Not listed.
		Social and economic values This marine park is valued for fishing (commercial, recreational and subsistence), diving, snorkelling and tourism. There is potential for scientific study and educational activities.

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Indian Ocean territory marine park	IUCN zones	Values
Cocos (Keeling) Islands Marine Park (DNP 2025b)	National Park (II) Habitat Protection (IV)	**Description** Cocos (Keeling) Islands are located around 2,750 km north-west of Perth. The Cocos (Keeling) Islands Marine Park covers a 467,054 km² area, extending from most of the islands' shoreline to the limit of the Australian EEZ, about 100 nm from shore. The Cocos (Keeling) Islands are a group of 27 tropical low-lying coral islands. The Cocos (Keeling) Islands Marine Park was established on the 20 March 2022 by the Australian Government under the EPBC Act and managed by the Commonwealth DNP.
		Natural values The central lagoon system and outer reefs are two of the islands' important habitats. The lagoon encompasses a variety of unique and distinct habitats. This includes seagrass, which is essential for the resident green turtle population (which is a genetically distinct stock that is unique to the islands) and for sustaining fish populations. The outer reef habitats are dominated by hard and soft corals and have a high abundance and diversity of reef fish and other species. The offshore waters contain a range of unique seafloor features, habitats and species, particularly seamounts, deep-sea plains and a significant deep-sea ridgeline. This marine park also protects the foraging habitat of nesting seabirds on North Keeling Island (Pulu Keeling National Park), and species such as dolphins, deep-sea fish and sharks that are or may be threatened elsewhere in the region.
		Cultural values Most of the islands' community members are Cocos Malay, who maintain vibrant and unique cultural traditions, including strong cultural connections to the surrounding marine environment, which is evident through traditional fishing practices, and environmental knowledge of the marine environment, which has been sustained over generations. The lagoon and ocean are an important part of life for all community members living on the remote atoll.
		Heritage values Not listed.
		Social and economic values This marine park is valued for recreational and subsistence activities (fishing, boating, diving, snorkelling, kite surfing, and kayaking), tourism, scientific research and educational activities.

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12.6 Threatened ecological communities

No threatened ecological communities (TECs) as listed under the EPBC Act are known to occur within the marine waters of the NWMR or NMR, as indicated by the PMST reports (Appendix A). However, the monsoon vine thickets on the coastal sand dunes of Dampier Peninsula TEC occurs on the coastal dunes of Dampier Peninsula in the NWMR. The subtropical and temperate coastal saltmarsh (which is a TEC) occurs within the marine water of the SWMR. No TECs occur in the NMR. Table 12-3 describes TECs in the NWMR.

Table 12-3: Summary of threatened ecological communities within the NWMR

TEC	Description	Conservation values
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	The ecological community represents certain occurrences of monsoon vine thickets in the southwest Kimberley region of WA, predominantly restricted to the coastlines of the Dampier Peninsula from Broome in the south to One Arm Point in the north and on the north-eastern coast of the Peninsula from One Arm Point to Goodenough Bay (DSEWPaC 2013d). The TEC occurs as discontinuous patches of dense vegetation and contains about 23% of vascular plant species that occur on the Dampier Peninsula. The ecological community contains deciduous, semi-deciduous and evergreen perennial flora species (DSEWPaC 2013d).	The ecological community is listed as endangered (DSEWPaC 2013d). The extent of the ecological community corresponds to Country (the traditional lands) of the Bardi Jawi, Djabera Djabera, Goolarabaloo, Jabirr Jabirr, Nyul Nyul and Yawuru Indigenous people. The ecological community is of cultural significance (DSEWPaC 2013d). Patches of the TEC operate as an ecological network, with birds, mammals and frugivore species providing connectivity. The vegetation provides refuge for animals (DSEWPaC 2013d).

12.7 Australian Whale Sanctuary

The Australian Whale Sanctuary (DCCEEW 2023g) has been established to protect all whales and dolphins found in Australian waters. Under the EPBC Act, all cetaceans (whales, dolphins and porpoises) are protected in Australian waters.

The Australian Whale Sanctuary includes all Commonwealth waters from the 3 nm State/Territory waters limit out to the boundary of the EEZ (i.e. out to 200 nm and further in some places). Within the Australian Whale Sanctuary, it is an offence to kill, injure or interfere with a cetacean. Severe penalties apply to anyone convicted of such offences. It is the responsibility of the state and territory governments to protect whales and dolphins within State and Territory waters (3 nm from the coastline).

12.8 State marine parks and reserves

State marine parks and reserves, proclaimed under the *Conservation and Land Management Act 1984* (WA), are in State waters and vested in the WA Conservation and Parks Commission. Marine-interfacing state marine parks and reserves of WA have been considered, with 12 occurring in the NWMR (Table 12-4), six in the NMR and 14 in the SWMR.

The Exmouth Gulf Taskforce delivered its final report, including advice and recommendations to the Minister for the Environment in 2025, to inform the Exmouth Gulf Marine Park and outline its values and recommended management approach (Government of Western Australia 2025).

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12.9 Summary of protected areas within the NWMR

Table 12-4 describes the protected areas classed as natural within the NWMR. Protected places classed as Indigenous and historic within the NWMR are described in Table 13-2.

Table 12-4: Protected areas within the NWMR

Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
World Heritage properties					
Shark Bay World Heritage property	-	-	✓	Natural	**Description** The Shark Bay World Heritage property is adjacent to the Shark Bay AMP and was included on the World Heritage List in 1991 (UNESCO 1991).
					Conservation values Universal values of the Shark Bay World Heritage property include large and diverse seagrass beds, stromatolites and populations of dugongs and threatened species. Inscribed under natural criteria vii, viii, ix and x (UNESCO 1991).
The Ningaloo Coast World Heritage property	-	-	✓	Natural	**Description** The Ningaloo Coast World Heritage property is about 710,000 ha and lies within the Ningaloo AMP and was included on the World Heritage List in 2011 (UNESCO 2011).
					Conservation values Universal values of the Ningaloo Coast World Heritage property include high marine species diversity and abundance; particularly, Ningaloo Reef supports both tropical and temperate marine reptiles and mammals inscribed under natural criteria vii and x (UNESCO 2011).
Murujuga Cultural Landscape	-	✓	-	Indigenous	See Section 12.2.1 for the description and values of this World Heritage property.
National Heritage places					
Shark Bay	-	-	✓	Natural	**Description** The Shark Bay National Heritage Place consists of the same area included in the Shark Bay World Heritage property (refer above) and was established on the National Heritage List in 2007 (DEC 2008).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Conservation values This National Heritage place has multiple exceptional natural features, including one of the largest and most diverse seagrass beds in the world, colonies of stromatolites and rich marine life, including a large population of dugongs, and provides a refuge for other globally threatened species. Shark Bay meets the National Heritage listing criteria a, b, c, d, e, f, g, h and i (DEC 2008).
The Ningaloo Coast	-	-	✓	Natural	**Description** The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo Coast World Heritage property (refer above) and was established on the National Heritage List in 2010 (Commonwealth of Australia 2010).
					Natural values The Ningaloo Coast contains one of the best developed nearshore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens, and the whale shark. The Ningaloo Coast meets National Heritage listing criteria a, b, c, d and f (Commonwealth of Australia 2010).
The West Kimberley	✓	✓	-	Natural	**Description** The West Kimberley National Heritage place covers an area of around 192,000 km² in the north-west of Australia from Broome to Wyndham, and was established on the National Heritage List in 2011 (Commonwealth of Australia 2011a).
					Conservation values The Kimberley plateau, north-western coastline and northern rivers of the West Kimberley provide a vital refuge for many native plants and animals that are found nowhere else or which have disappeared from much of the rest of Australia. In addition, Roebuck Bay is internationally recognised as one of Australia's most significant sites for migratory wading birds. This National Heritage place also contains a remarkable history of Indigenous occupation, with many places of Indigenous sacred value. The West Kimberley meets the National Heritage listing criteria a, b, c, d, e, f, g, h and i (Commonwealth of Australia 2011a).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
Dampier Archipelago	-	✓	-	Historic	**Description** The Dampier Archipelago National Heritage place, about 1550 km north of Perth in WA, covers around 400 km² of islands, reefs and the Burrup Peninsula, and was added to the National Heritage List on 3 July 2007 for its extensive and significant Indigenous rock art and natural values (Commonwealth of Australia 2007). **Conservation values** The Dampier Archipelago National Heritage place is recognised for its outstanding cultural heritage values, particularly its extensive and diverse rock engravings that record Aboriginal responses to environmental change over thousands of years. The area is notable for the rarity and density of its engravings and stone features, its high potential to yield information about Australia's cultural history, and its representation of major Pilbara rock art styles. It also demonstrates a high degree of creative and technical achievement through detailed and complex depictions of human activity and fauna. The Dampier Archipelago meets National Heritage criteria a, b, c, d and f (Commonwealth of Australia 2007).
Dirk Hartog Landing Site/Cape Inscription	-	-	✓	Indigenous	**Description** Cape Inscription, located on Dirk Hartog Island in WA, was inscribed on the National Heritage List in 2006 and marks the site of the earliest recorded European landings on Australia's west coast in 1616, with subsequent visits over 250 years contributing to the mapping of the continent and its inclusion on world maps (Commonwealth of Australia 2006b). **Conservation values** The Cape Inscription/Dirk Hartog Landing National Heritage place is recognised for its outstanding cultural heritage values as the site of the earliest recorded European landing on Australia's west coast and for its strong associations with a sequence of prominent explorers and surveyors over a 250-year period. The area is notable for the rarity of its surviving physical evidence of early exploration, including inscription sites and landing locations, and its role in the development of European scientific knowledge, particularly early botanical collection and classification. It also demonstrates the processes of exploration, survey and mapping that led to the first accurate delineation of the Australian coastline and major changes in world cartography. The Cape Inscription/Dirk Hartog Landing meets National Heritage criteria a, b, d and h (Commonwealth of Australia 2006b).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
HMAS Sydney II and HSK Kormoran Shipwreck Sites	-	-	✓	Historic	**Description** The HMAS Sydney II and HSK Kormoran shipwrecks are about 290 km west-south-west of Carnarvon, WA, in waters around 2,500 m deep, and were added to the National Heritage List in 2011 after their significance as the site of a major World War II naval battle on 19 November 1941.
					Conservation values The HMAS Sydney II and HSK Kormoran Shipwreck Sites are recognised for their outstanding cultural heritage values as the remains of a defining naval engagement in Australia's World War II history and for their enduring significance as places of loss and commemoration. The sites are notable for the rarity and integrity of their surviving underwater fabric, which provides important archaeological evidence of the 1941 battle and has contributed to resolving longstanding historical uncertainties. They also demonstrate aspects of wartime technological innovation and Australia's evolving wartime experience, alongside strong social value as the final resting places of those who perished. The HMAS Sydney II and HSK Kormoran Shipwreck Sites meet Commonwealth Heritage criteria a, c, f, g and h (Commonwealth of Australia 2011b).
Commonwealth Heritage places					
Ashmore Reef National Nature Reserve	✓	-	-	Natural	**Description** The Ashmore Reef Commonwealth Heritage place is within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage place in 2004 (DCCEEW n.d.-d).
					Conservation values Ashmore Reef has major significance as a staging point for wading birds migrating between Australia and the northern hemisphere and supports high concentrations of breeding seabirds, many of which are nomadic and typically breed on small, isolated islands. Ashmore Reef is an important scientific reference area for migratory seabirds, sea snakes and marine invertebrates. The Ashmore Reef Commonwealth Heritage place is significant for its history of human occupation and use. The island is believed to have been visited by Indonesian fishers since the early eighteenth century. The islands were used both for fishing and as a staging point for voyages to the southern reefs off Australia's coast (DCCEEW n.d.-d).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
Learmonth Air Weapons Range Facility	-	-	✓	Natural	**Description** Located along the Ningaloo coastline, the Learmonth Air Weapons Range Facility was one of Australia's most active bombing ranges until 1990. It is of considerable importance in documenting sea level and landform changes since the late Cenozoic period (DCCEEW n.d.-b). **Conservation values** The area includes an ancient reef complex and cave fauna that is of exceptional importance. The ages of the reef terraces are key to understanding the timing of uplift events. The Learmonth Air Weapons Range Facility meets the Commonwealth Heritage listing criteria a, b and c (DCCEEW n.d.-b).
Mermaid Reef–Rowley Shoals	-	✓	-	Natural	**Description** The Mermaid Reef–Rowley Shoals Commonwealth Heritage place is within the boundary of the Mermaid Reef Marine National Nature Reserve. The site was listed as a Commonwealth Heritage place in 2004 (DCCEEW n.d.-a). **Conservation values** The Mermaid Reef–Rowley Shoals Commonwealth Heritage place is regionally important for the diversity of its fauna and, together with Clerke and Imperieuse reefs, has biogeographical significance due to the presence of species that are at or near the limits of their geographic ranges, including fishes known previously only from Indonesian waters. Rowley Shoals is important for benchmark studies as one of the few places off the north-west coast of WA that have been the site of major biological collection trips by the Western Australian Museum (DCCEEW n.d.-a).
Ningaloo Marine Area – Commonwealth Waters	-	-	✓	Natural	**Description** The Ningaloo Marine Area Commonwealth Heritage place is within the Commonwealth waters of the Ningaloo Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage place in 2004 (DCCEEW n.d.-f).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Conservation values The Ningaloo Marine Area Commonwealth Heritage place provides a migratory pathway for humpback whales and foraging habitat for whale shark. The place is an important breeding area for billfish and manta ray. The Ningaloo Marine Area provides opportunities for scientific research relating to aspects of the area's unique features, including tourism, marine ecology (whales, turtles, whale shark, fish) and oceanography (DCCEEW n.d.-f).
Scott Reef and Surrounds – Commonwealth Area	✓	-	-	Natural	**Description** Scott Reef and Surrounds Commonwealth Heritage place is within the WA coastal waters surrounding North and South Scott Reef. The site was listed as a Commonwealth Heritage place in 2004 (DCCEEW n.d.-e).
					Conservation values The Scott Reef and Surrounds Commonwealth Heritage place is regionally important for the diversity of its fauna and has biogeographical significance due to the presence of species that are at or near the limits of their geographic ranges, including fish known previously only from Indonesian waters. Scott Reef is recognised as important for scientific research and benchmark studies due to its age, the extensive documentation of its geophysical and physical environmental characteristics, and its use as a site of major biological collection trips and surveys by the Western Australian Museum and AIMS (DCCEEW n.d.-e).
Yampi Defence Area	✓	-	-	Natural	**Description** Located 35 km south of Koolan Island, the Yampi Defence Area displays a unique mosaic of geographical landforms that is unique to the region. The occurrence of such diverse landscapes within a small area is unusual (DCCEEW n.d.-c).
					Conservation values The Yampi Defence Area occurs at the confluence of three biogeographic regions in the north-west of Australia. It exhibits diverse landforms, soils and vegetation representative of the sandstone plateaux of the wetter areas of the north-west Kimberley to the broad plains and pindin scrub of the drier areas in the south-west Kimberley. The Yampi Peninsula contains one of the richest amphibian records in the Kimberley. The Yampi Defence Area meets Commonwealth Heritage Listing criteria a, b and c (DCCEEW n.d.-c).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
HMAS Sydney II and HSK Kormoran Shipwreck Sites	-	-	✓	Historic	Refer to National Heritage properties for a description and the conservation values of the HMAS Sydney II and HSK Kormoran Shipwreck Sites.
Wetlands of international importance (Ramsar)					
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	**Description** The Ashmore Reef Ramsar site is within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed under the Ramsar Convention in 2002 (Commonwealth of Australia 2002b). **Conservation values** The Ashmore Reef Ramsar site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugongs, and has the highest diversity of hermatypic (reef-building) corals on the WA coast. It is known for its abundance and diversity of sea snakes. However, populations of sea snakes at Ashmore Reef since 1998 have been in decline (Commonwealth of Australia 2002b). **Cultural values** Indonesian fishers have regularly visited Ashmore Reef since the early eighteenth century to fish within the area and use the islands for staging points before travelling to other reefs in the region. Indonesian artefacts have been found on Cartier Island and West, Middle and East Islands (Commonwealth of Australia 2002b).
Eighty Mile Beach	-	✓	-	Ramsar	**Description** The Eighty Mile Beach Ramsar site covers an area of 1,250 km², located along a long section of the WA coastline adjacent to the Eighty Mile Beach AMP (refer below) (CALM 2003a). **Conservation values** The Eighty Mile Beach Ramsar site includes saltmarsh and a raised peat bog more than 7,000 years old. The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a landfall for waders migrating south for the austral summer (CALM 2003a).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	***NWS/ Scarborough***	***North West Cape***		
Ord River Floodplain	✓	-	-	Ramsar	**Description** The Ord River Floodplain Ramsar site is in the East Kimberley region and encompasses an extensive system of river, seasonal creek, tidal mudflat and floodplain wetlands. The site is a nursery, feeding or breeding ground for migratory birds, waterbirds, fish, crabs, prawns and crocodiles. The site supports vulnerable species under the EPBC Act, including freshwater sawfish (*Pristis microdon*), green sawfish (*Pristis zijsron*) and the Australian painted snipe (*Rostratula australis*). The site is also one of the only two known habitats in WA of the nationally endangered northern river shark (*Glyphis garricki*) (DCCEEW 2019a).
					Conservation values The site represents the best example of wetlands associated with the floodplain and estuary of a tropical river system in the Tanami–Timor Sea Coast bioregion in the Kimberley. In addition, the False Mouths of the Ord are the most extensive mudflat and tidal waterway complex in WA (DCCEEW 2019a).
Roebuck Bay	-	✓	-	Ramsar	**Description** The Roebuck Bay Ramsar site covers an area of 550 km², south of Broome and adjacent to the Roebuck AMP (refer below) (CALM 2003b).
					Conservation values The Roebuck Bay Ramsar site is recognised as one of the most important areas for migratory shorebirds in Australia. The site regularly supports over 100,000 waterbirds, with numbers being highest in the Austral spring when migrant species breeding in the Palearctic stop to feed during migration. Roebuck Bay supports one of the largest known populations of Australian snubfin dolphins (*Orcaella heinsohni*) – a species with a limited distribution, vulnerable conservation status and high cultural value (CALM 2003a; D'Cruz *et al*. 2022).
State marine parks and reserves					
Bardi Jawi Gaarra Marine Park	✓	-	-	Sanctuary, Recreation, Special Purpose Zones (biocultural	**Description** The Bardi Jawi Gaara Marine Park is in the West Kimberley region surrounding the northern part of the Dampier Peninsula and the western islands of the Buccaneer Archipelago, covering areas of about 2,040 km².

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
				conservation and cultural protection), and General use	**Conservation values** The Bardi Jawi Gaara Marine Park has a tidal range of 11 m, which is the highest in Australia. The mangrove-lined creeks, intertidal and fringing reef areas that encompass the coastline and islands are ecologically important and host a vast number of plants and animals that have adapted to the unique area. Migratory marine mammals. including humpback whales, migrate to the areas between June and November each year to birth their young. Dugongs visit the area in the cooler months from May to July (DBCA 2022a).
					Social and Economic Values Commercial fishing, pearling and aquaculture are important economic activities that occur within this region. The area is a popular tourism destination and hosts a number or recreational activities and water sports (DBCA 2022a).
					Cultural values The Bardi and Jawi people have a significant connection to the animals, sites and places within this region, which are connected by stories and songlines. The Sea Country is used for hunting, fishing, cultural activities and business (DBCA 2022a).
Barrow Island Marine Park and Barrow Island Marine Management Area, and Montebello Islands Marine Park (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Barrow Island Marine Park and Barrow Island Marine Management Area and Montebello Islands Marine Park are located off the north-west coast of WA, about 1,600 km north of Perth, and cover areas of about 583 km², 42 km² and 1,147 km², respectively (DEC 2007b).
					Conservation values The Montebello/Barrow Islands marine conservation reserves have very complex seabed and island topography, resulting in a myriad of different habitats, subtidal coral reefs, macroalgal and seagrass communities, subtidal soft-bottom communities, rocky shores and intertidal reef platforms, which support a rich diversity of invertebrates and finfish. The reserves are important breeding areas for several species of marine turtles and seabirds, which use the undisturbed sandy beaches for nesting. Humpback whales migrate through the reserves and dugongs occur in the shallow warm waters (DEC 2007b).
					Social and economic values Major commercial fishing and pearling occur within the area and provide employment and economic value to surrounding communities. Nature-based tourism, water sports and recreational fishing are popular recreational activities in the area (DEC 2007b).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Cultural values There are no recorded seabed Aboriginal sites within this park. However, it is possible there are Aboriginal archaeological sites on the seabed that were created before the most recent sea level rise (DEC 2007b).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special Purpose and General Use Zones	**Description** Eighty Mile Beach Marine Park covers about 2,000 km² stretching across 220 km of coastline between Port Hedland and Broome (Department of the Parks and Wildlife (DPAW) 2014a).
					Conservation values Eighty Mile Beach Marine Park is one of the world's most important feeding grounds for small wading birds that migrate to the area each summer, travelling from countries thousands of kilometres away. The marine park is a major nesting area for flatback turtles that are found only in northern Australia. Sawfishes, dugongs, dolphins and millions of invertebrates inhabit the sand and mud flats, seagrass meadows, coral reefs and mangroves (DPAW 2014a).
					Social and economic values Social values of the marine park include tourism, nature-based recreational activities and commercial fishing (DPAW 2014a).
					Cultural values The Karajarri, Nyangumarta and Ngarla people have a powerful connection to the land and sea of this region. Traditional hunting and fishing are important cultural activities for the Traditional Owners of this marine park (DPAW 2014a).
Lalang-gaddam Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Lalang-gaddam Marine Park is managed under the amended joint management plan for the Lalang-gaddam/Camden Sound, Lalang-gaddam/Horizontal Falls and North Lalang-gaddam marine parks, and the indicative joint management plan for the proposed Maiyalam Marine Park (DBCA 2022b). . The Lalang-gaddam Marine Park is in the Kimberley region of WA and adjacent to Derby and the Shire of Wyndham. The Class A marine park covers about 13,085 km² (DBCA 2022b).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Conservation values The Lalang-gaddam/Camden Sound Marine Park is the most important humpback whale nursery in the southern hemisphere. It also features the spectacular coastal Montgomery Reef. The marine park is home to six species of threatened marine turtle, Australian snubfin and Indo-Pacific humpback dolphins, saltwater crocodiles, manta rays, several species of protected sawfish, and the world's large population of dugongs (about 12,000). The Lalang-gaddam Marine Park's most celebrated attraction, The Horizontal Falls, is created by massive tides of up to 10 m and narrow gaps in two parallel tongues of land, meaning the tide falls faster than the water can escape, producing 'horizontal falls'. There are also islands with fringing coral reefs and mangrove-lined creeks and bays. This marine park has islands fringed with coral reef. It has been identified as an ecological hotspot and supports more than 1% of the world's population of brown boobies, with up to 2,000 breeding pairs. About 500 pairs of crested terns also nest on the island (DBCA 2022b).
					Social and economic values This marine park has spectacular scenery that attracts tourists and generates about $563 million annually. Recreational fishing and recreational maritime activities are popular within this marine park. Commercial fisheries can operate within the waters of this marine park, but many do not regularly fish within this area. Pearling and aquaculture occur within this marine park and provide economic value for the region (DBCA 2022b).
					Cultural values The area is of cultural significance to the Dambeemangarddee people who have lived on the land and cared for land and Sea Country for tens of thousands of years. Some animals such as the barramundi and rock cod have particular cultural significance and are sacred animals to the Dambeemangarddee people. Numerous coastal and marine plants continue to be an important food source for the Traditional Owners of this marine park (DBCA 2022b).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
Mayala Marine Park	✓	-	-	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Mayala Marine Park is a Class A reserve in the West Kimberley region and covers about 3,150 km² (DBCA 2022c).
					Conservation values The Mayala Marine Park has a tidal range of 11 m, the highest in Australia. The mangrove-lined creeks, intertidal and fringing reef areas that encompass the coastline and islands are ecologically important and host a vast number of plants and animals that have adapted to the unique area. The seagrass communities provide habitat and food for many species, including turtles and dugongs. Migratory marine mammals, including humpback whales, migrate to the areas between June and November each year to birth their young. Dugongs visit the area in the cooler months from May to July (DBCA 2022c).
					Social and economic values Due to the extraordinary natural values of the area, the number of visitors to the area has continued to grow over the years. Popular activities within the park include fishing, boating and wildlife watching. The waters of this area provide optimal conditions for commercial fishing, pearling and aquaculture (DBCA 2022c).
					Cultural values The area is of exceptional cultural significance to the Malaya people who are true saltwater people and use both land and sea resources and have a strong connection to the land, animals and plants of the region. This marine park has many sacred sites that occur on land and sea, which include artefacts, fish traps and human-made structures. This marine park is culturally significant to the Malaya people who care for Country and use this marine park for fishing, hunting and camping (DBCA 2022c).
Ningaloo Marine Park and Muiron Islands Marine Management	-	-	✓	Sanctuary, Recreation, General Use and	**Description** The Ningaloo Marine Park and Muiron Islands Marine Management Area are off the North West Cape, about 1,200 km north of Perth, and cover areas of about 2,633 km² and 286 km², respectively (CALM 2005a).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
Area (jointly managed)				Special Purpose Zones	**Ecological Values** Ningaloo Reef is the largest fringing coral reef in Australia. Temperate and tropical currents converge in the Ningaloo region, resulting in highly diverse marine life, including spectacular coral reefs, abundant fishes and species with special conservation significance such as turtles, whale sharks, dugongs, whales and dolphins. The region has diverse marine communities, including mangroves, algae and filter-feeding communities, and has high water quality. These values contribute to the Ningaloo Marine Park being regarded as the state's premier marine conservation icon. The area features large aggregations of marine mammals, fish and whale sharks, which coincide with the Ningaloo mass coral spawning and seasonal nutrient upwelling events. The key values include karst environments, interglacial fossil reefs, rocks shores and sandy beaches. The area supports populations of threatened turtle nesting areas, seabird and shorebird roosting and breeding areas, and priority flora and vegetation that is a habitat for endemic reptiles and invertebrates (DBCA 2022d). The Muiron Islands Marine Management Area is also important, containing a very diverse marine environment, with coral reefs, filter-feeding communities and macroalgal beds. In addition, the islands are important seabird and green turtle nesting areas (CALM 2005a).
					Social and economic values The Ningaloo region has a high number of visitors enjoying the area who come to appreciate nature-based tourism, which brings important economic value to the communities of the area (CALM 2005a). The aesthetic values of the seascape are noted as a cultural value and that panoramic vistas of turquoise lagoon waters, reefs, beaches, breaking surf and the blue open ocean beyond the reef line are major attractions of the reserves.

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Cultural values The Ningaloo Reef has a long history of occupancy by Aboriginal communities and Aboriginal heritage sites. The Jinigudira and Baiyungu people have lived in this region for thousands of years and use coastal areas for fishing, camping and hunting of turtles and dugongs (CALM 2005a). Nyinggulu (Ningaloo) coast is highly valued by the Traditional Owners of the area, with many culturally significant values in the area, including cultural heritage sites and places of ceremonial and mythological significance. There are also culturally significant animals and plants in the areas, some of which are sacred totems that relate to Creation stories, ceremonies or are used as medicine or food. There are also significant thalu sites along the coast, which are used for ceremonies and rituals to increase the numbers of particular species. Undertaking customary activities on Country is central to maintaining the cultural heritage of the land. Such activities are an important part of Traditional Owner and wider Aboriginal culture, enabling maintenance of traditional relationships with the land and water, sharing of knowledge, engagement in traditional practices, and accessing and looking after significant places (DBCA 2022d).
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	**Description** The North Kimberley Marine Park covers 18,450 km², with its south-western boundary located about 270 km north-east of Derby (DPAW 2016a).
					Conservation values The marine park covers about 1,845,000 ha. The coral reefs of the North Kimberley have the greatest diversity in WA and are some of the most pristine and remarkable reefs in the world. The park surrounds more than 1,000 islands and is home to listed species such as dugongs, marine turtles and sawfishes (DPAW 2016a).
					Social and economic values The park features diverse wildlife, remarkable scenery and cultural heritage, which provide excellent opportunities for tourism experiences, recreational and nature-based activities such as fishing and hunting (DPAW 2016a).
					Cultural values The Wunambal Gaambera, Balanggarra, Ngarinyin and Miriuwung Gajerrong people have strong and ongoing cultural connections to the North Kimberley saltwater Country and rely on coastal and marine environments and resources for their cultural identity, livelihoods and economy (DPAW 2016a).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
Pilbara Island Nature Reserve (Great Sandy Island, Rocky Island, Thevenard Island)	-	✓	-	Nature Reserve	**Description** Located between the Ningaloo Coast World Heritage area and the Dampier Archipelago, the Pilbara Islands Nature Reserve includes 174 small islands with a combined area of over 130 km² and a total coastline of over 500 km. Islands within this management area are characterised by foredunes surrounding a central depression and less than 12 m in elevation (DBCA 2020a).
					Conservation values The islands provide a refuge for threatened and migratory species, including the critically endangered eastern curlew, great knot and curlew sandpiper. The islands provide nesting beaches for green, flatback, hawksbill and loggerhead turtles. Mangrove thickets are found on some of the islands, which provide essential habitat for coastal species and shorebirds (DBCA 2020a).
					Social and economic values Visitation to the islands is low and only by private boat. Commercial accommodation is only available at Thevenard Island. Recreational fishing is undertaken around the islands. Thevenard Island previously was used as a base for an oil and gas facility but is being decommissioned (DBCA 2020a).
					Cultural values The Nganhurra Thanadri Garrbu Aboriginal Corporation and the Wirrawandi Aboriginal Corporation have native title determinations over parts of the planning area. The area holds significant cultural value to Indigenous people. Culturally significant sites, places and species are found within the area. Customary activities including hunting, ceremonies and sharing of traditional knowledge is practiced in the region. Thevenard Island contains one registered site under the *Aboriginal Heritage Act 1972*, which includes a midden scatter with three baler shell containers. Aboriginal artefacts have been found on some of the islands, including a burial site, stone and glass flakes, brunt shell and bone and baler shells. Some of the islands were possibly occupied by Indigenous people of the region (DBCA 2020a).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	**Description** The Rowley Shoals comprise three reef systems: Mermaid Reef, Clerke Reef and Imperieuse Reef; all are 30 to 40 km apart. These reef systems are about 300 km west-north-west of Broome (DEC 2007a).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Conservation values The three coral atolls of the Rowley Shoals Marine Park comprise of shallow lagoons inhabited by diverse corals and abundant marine life, each covering around 80 km² at the edge of Australia's continental shelf (DEC 2007a). Further offshore, the seafloor slopes away to the abyssal plain, some 6,000 m below. Undersea canyons slice the slope. These features are commonly associated with diverse communities of deepwater corals and sponges and create localised upwellings that aggregate pelagic species like tunas and billfish (DEC 2007a).
					Social and economic values Due to its remote location, the Rowley Shoals has low numbers of visitors, with most arriving aboard licenced charter boats. Popular activities in the area include scuba diving, recreational fishing and boating (DEC 2007a).
Scott Reef	✓	-	-	Nature Reserve	The values of Scott Reef Nature Reserve are described in the Scott Reef and Surrounds – Commonwealth Area above.
Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	**Description** The Shark Bay Marine Park and Hamelin Pool Marine Nature Reserves are 400 km north of Geraldton, covering areas of about 7,487 km² and 1,270 km², respectively (CALM 1996).
					Conservation values Seagrass covers over 4,000 km² of the Shark Bay Marine Park, with 12 different species making it one of the most diverse seagrass assemblages in the world. Dugongs regularly use this habitat, with the bay containing one of the largest populations in the world. Humpback whales also use the bay as a staging post in their migration along the coast. Green and loggerhead turtles occur in the bay, with Dirk Hartog Island providing the most important nesting site for loggerheads in WA. Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3,500 million years ago (CALM 1996).
					Social and economic values Commercial fishing and tourism are important economic values of the region. Popular recreational activities include nature-based tourism, recreational fishing and water sports (DEC 2008).

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Protected area	Woodside activity area			IUCN protected area category* or relevant park zone	Description and values
	Browse	*NWS/ Scarborough*	*North West Cape*		
					Cultural values The Malgana people occupy the land and waters in the vicinity of Shark Bay and have strong cultural connection to the region. The area is important for cultural practices and for fishing, hunting and camping for the Malgana people (DEC 2008).
Yawuru Nagulagun/ Roebuck Bay Marine Park	-	✓	-	Special Purpose Zone	**Description** Yawuru Nagulagun/Roebuck Bay Marine Park is a series of intertidal flats lying on the coast to the south-east of Broome.
					Conservation values Roebuck Bay is an internationally significant wetland and one of the most important feeding grounds for migratory shorebirds in Australia. Australian snubfin and Australian humpback dolphins frequent the waters and humpback whales pass through on their annual migration. Flatback turtles nest on the shores and are found in the bay's waters with other sea turtle species. Seagrass and macroalgae communities provide food for protected species such as the dugongs and flatback turtles (DPAW 2016b).
					Social and economic values The marine park is adjacent to Broome, supports tourism activities and provides an active outdoor lifestyle for the residents of the region (DPAW 2016b).
					Cultural values The Yawuru people have lived along the shores of Roebuck Bay for thousands of years and have a dynamic and enduring relationship with the Yawuru Country. The coastline is important for cultural activities and is a place for hunting, fishing, gathering and camping for the Yawuru people (DPAW 2016b).

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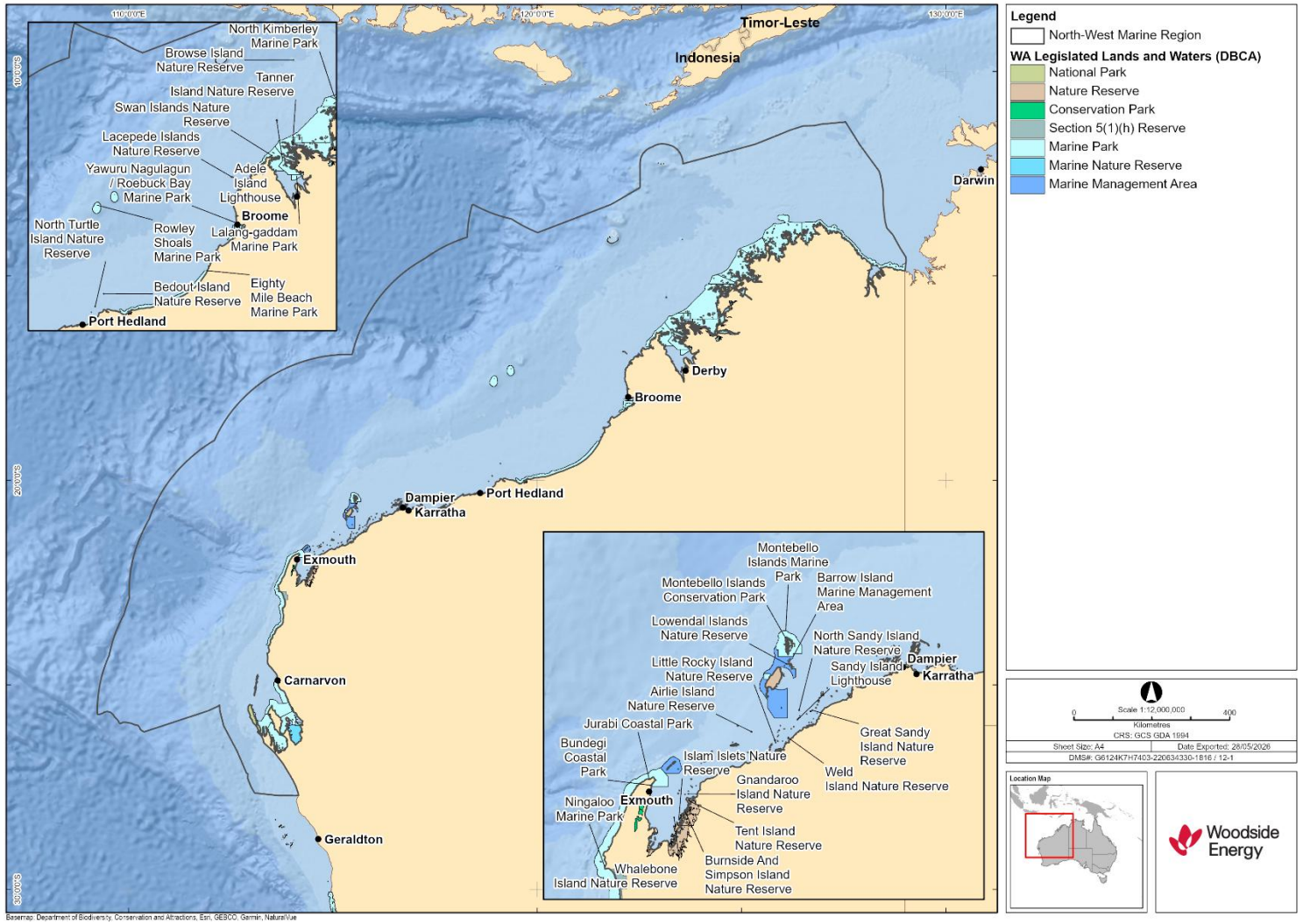


Figure 12-2: Commonwealth and State Marine Protected Areas for the NWMR

Source: Geoscience Australia (2026)

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13. SOCIOECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socioeconomic and cultural environment of the regions offshore of WA, with a focus on the NWMR.

13.1 Cultural values and heritage

Woodside's approach to cultural values and heritage management reflects our publicly available Indigenous Communities Policy (Woodside 2025). This policy is underpinned by core principles that ensure our management of cultural heritage is thorough, transparent and supported by consultation and continued engagement with Indigenous communities. Our approach to identifying, managing and protecting cultural heritage is consistent with the United Nations Declaration on the Rights of Indigenous Peoples, engaging with Indigenous communities in ways that reflect the principles of seeking free, prior and informed consent. Where heritage is concerned, Woodside seeks to avoid impact or, if avoidance is not possible, to minimise and mitigate impact through consultation with relevant Indigenous communities. We seek to ensure Traditional Owners and Custodians are central to heritage management so cultural values are understood and remain protected.

Australia ICOMOS (International Council on Monuments and Sites) is a non-government peak body for cultural heritage professionals formed as a national committee for ICOMOS (international). Australia ICOMOS' mission is to lead cultural heritage conservation in Australia by issuing standards and practice notes. Woodside understands heritage value to mean the cultural significance of a place to an individual or group in line with the Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS 2013) (Burra Charter), and associated practice notes. A cultural feature is therefore comparable to the Burra Charter term "fabric" and refers to a place's elements, fixtures, contents and objects which have cultural values. Although these features are necessarily physical, the place they inhabit or comprise may have tangible or intangible dimensions (Australia ICOMOS 2013).

13.1.1 Native title

Woodside uses established systems, such as native title, to identify Indigenous groups that have functions, interests or activities that may be affected. While acknowledging cultural features and heritage values may exist outside of the native title framework, native title claims, determinations and Indigenous Land Use Agreements (ILUAs) are defined under the *Native Title Act 1993* (Commonwealth). Woodside considers this to be the broadest extent over which Indigenous groups have claimed native title rights and interests.

Native title claims are applications made to the Federal Court under the *Native Title Act* for a determination or decision about native title in a particular area. A claim is made by a native title claim group that asserts it holds native title rights and interests in an area of land or water, according to its traditional laws and customs. By making a claim, the native title claim group seeks a decision that native title exists so its rights and interests are recognised by the common law of Australia. This is called a native title determination. A determination is a decision by a recognised body, such as the Federal Court or High Court of Australia, that native title either does or does not exist in relation to a particular area (Native Title Tribunal).

A requirement to establishing a positive determination of native title in court is proving there is an organised society that occupied the land or waters at the time of British annexation. The requirement of an 'organised society' is set out by Justice Toohey in the historic judgment of Mabo v Queensland (No 2)) [1992] HCA 23; (1992) 175 CLR 1 ('Mabo'). Justice Toohey had the following to say (at 187):

> "…it is inconceivable that indigenous inhabitants in occupation of land did not have a system by which land was utilised in a way determined by that society. There must, of course, be a society sufficiently organised to create and sustain rights and duties…"

Therefore, Woodside understands native title rights and interests are held communally by an organised society, that native title claims are understood to represent the area over which Indigenous groups are claiming these rights and interests, and that native title determinations provide clarity on where native title rights and interests are found to either exist or not exist. Where native title rights or interests are determined to exist, they will be held by a Registered Native Title Body Corporate (RNTBC) (section 57, *Native Title Act*) in trust or as agent for native title holders.

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ILUAs are voluntary agreements between native title parties and other people or bodies about the use and management of land or waters and are registered by the Native Title Registrar in the Register of ILUAs. An ILUA can be made over areas where:

- native title has been determined to exist in at least part of the area, or
- a native title claim has been made, or
- where no native title claim has been made.

While registered, ILUAs operate as a contract between the parties, including relevant native title holders (Native Title Tribunal).

The *Native Title Act* provides for a Representative Aboriginal/Torres Strait Islander Body (Native Title Representative Body) to be recognised by the Commonwealth Minister for an area. Native Title Representative Bodies have specialist functions set out in the *Native Title Act* within the area for which they are the Native Title Representative Body. However, the functions of a Native Title Representative Body are such that they do not hold details ABOUT the cultural features or heritage values of an area and therefore do not inform Woodside's understanding of heritage values or cultural features.

13.1.2 Coastal Indigenous groups

Indigenous groups are keenly aware of the extent of their rights, interests and responsibilities for Country, and these are generally discrete, defined areas, including areas of sea (Smyth 2007). To identify cultural features and heritage values that may exist outside of native title claim, determination and ILUA areas, Woodside considers native title claims, determinations and ILUAs coastally adjacent to areas of operation to be an instructive means of identifying potentially relevant Indigenous groups to consult.

Woodside understands from engagement with stakeholders that extending a native title group's responsibility to areas those groups have elected to not include in their claims or ILUAs can have significant cultural consequences for groups and individuals. This may also, over time, build expectations in the broader community that a group is responsible for maintaining environmental values in areas for which they do not hold traditional knowledge.

Woodside acknowledges an Indigenous group's relative proximity to any operational areas is not necessarily a meaningful indicator of the connection to the area, and providing advice over such areas can be culturally dangerous. As a result, caution must be used when conducting broader engagement.

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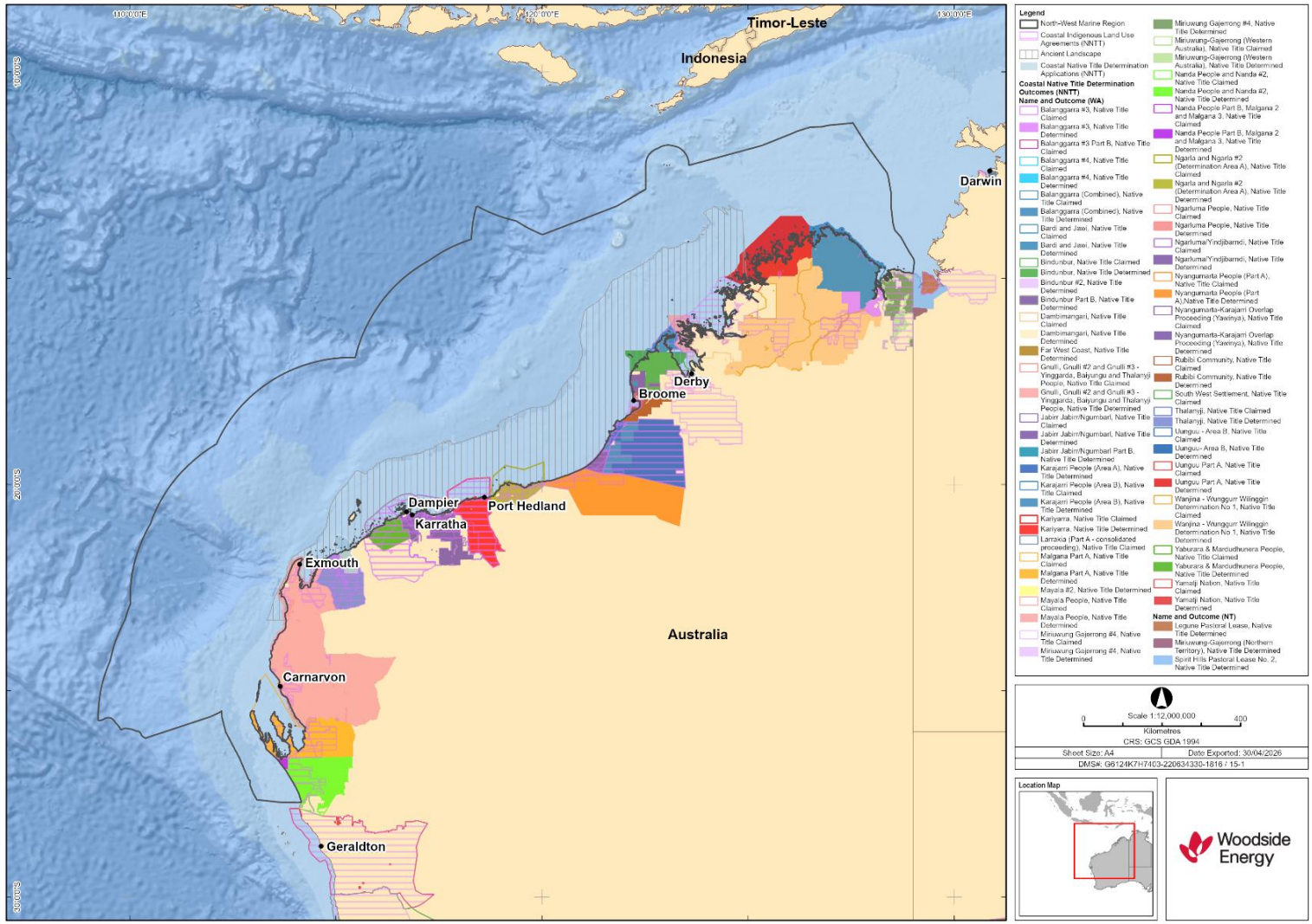


Figure 13-1: Coastal native title determination outcomes in the NWMR

Source: Department of Planning, Lands and Heritage (DPLH 2026)

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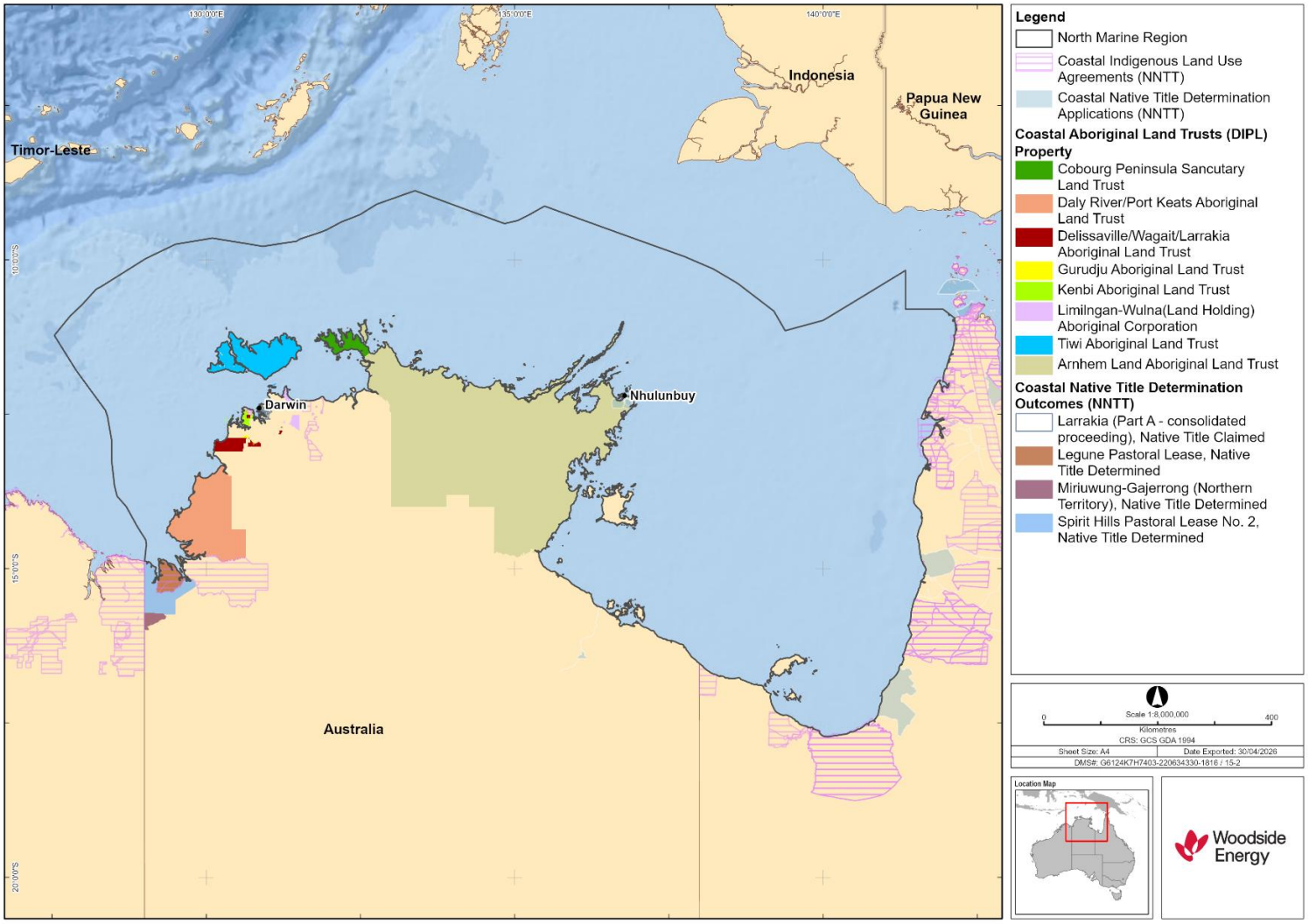


Figure 13-2: Coastal native title claims and determinations and Indigenous Land Use Agreements in the NMR

Source: DPLH (2024)

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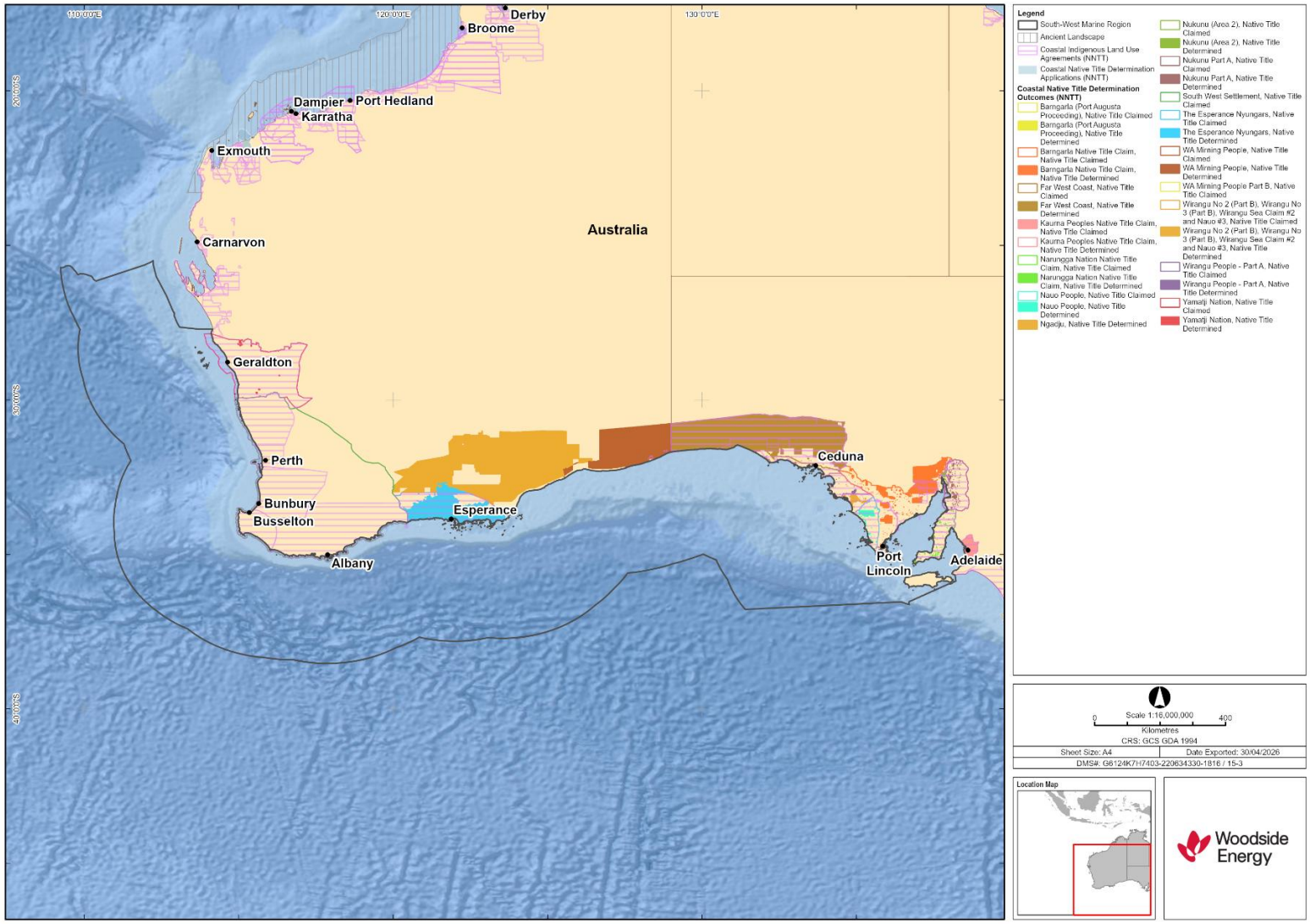


Figure 13-3: Coastal native title claims and determinations and Indigenous Land Use Agreements in the SWMR

Source: DPLH (2026)

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13.1.3 Sea Country

“Sea Country is valued for Indigenous cultural identity, health and wellbeing” (DNP, 2018a; 2018b).

Woodside recognises the potential for marine ecosystems to include cultural features as well as environmental values. This is one aspect of the broader concept of ‘Sea Country’, which can be defined as the area of sea over which an Indigenous group has interests, cultural value, connection and use. It has been noted that “the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as ‘Saltwater Country’ or ‘Sea Country’.

‘Country’ refers to more than just a geographical area; it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area (Smyth 2007), and encompasses the lands, waterways and seas to which Indigenous people are connected (Australian Institute of Aboriginal and Torres Strait Islander Studies 2026).

An impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within Sea Country – the seascape that Traditional Custodians view, interact with or hold knowledge of. The link between environmental protection and cultural heritage protection is illustrated in the Australian Government’s Indigenous Protected Areas Program. The Indigenous Protected Areas Program provides for “areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation…IPAs [Indigenous Protected Areas] deliver environmental benefits…Managing IPAs also helps Indigenous communities protect the cultural values of their Country for future generations…” (DCCEEW 2025c).

McNiven (2004) suggests that “For those mainland groups whose exploitation of the sea was limited to littoral resources, it is likely that seascapes extended no more than c. 20 to 30 km out to sea, out to the horizon and the limit of human visibility. However, in some coastal places, clouds that can be seen well over 100 km out to sea are imbued with spiritual significance. For those groups with elaborate canoe technology, seascapes extend well over the horizon.” While there is some evidence of traditional watercraft in Australia’s north-west, the recorded evidence is limited to travel across inland rivers (such as Barber and Jackson 2011) or travel between coastal islands (Paterson *et al*. 2019).

Cultural features of coastal areas may include marine species that may travel many thousands of kilometres through areas with similar cultural values to multiple Indigenous language groups. Some species may travel as far as 5,000 km from Antarctica to the Kimberley region of WA (Double *et al.* 2010; 2012), passing Indigenous language groups along the entire west coast of Australia.

Table 13-1: Commonly identified Sea Country species and habitats

Value	Details
Marine mammals	Whales, particularly humpbacks, and dugongs are commonly identified through consultation with Indigenous people as culturally important species, with totemic importance. Common interests include maintaining their populations, biodiversity, and migration patterns.
Marine reptiles	Turtles and sea snakes are commonly identified through consultation with Indigenous people as culturally important species and a favoured resource. Indigenous people that identify marine reptiles as species of totemic importance or integral to songlines may place high cultural value on their protection. Cultural knowledge of turtles at a population level (turtle migration, behaviour and the related marine environment) may all be important in ensuring the continuation of cultural functions and activities that remain valuable to Indigenous people (Fijn 2021:47; Delisle *et al.* 2018).
Fish and cephalopods	Fishes, stingrays and squids are commonly identified through consultation with Indigenous people as a culturally important species, with fish generally being identified as a resource. Indigenous people may identify cultural values associated with fish species as important to maintaining both tangible (physical sites) and intangible (knowledge) cultural heritage. Tangible cultural heritage associated with fish can include important cultural sites such as midden sites, fish traps and thalu sites. There are increase ceremonies for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed.
Seabirds	Seabirds, particularly shags, are commonly identified through literature as a culturally significant species (Malgana Land and Sea Management *et al.* 2021) and a resource (seabird eggs; Smyth 2007).

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Value	Details
Benthic habitats	Indigenous peoples identify benthic habitats as valuable for both their ecological and aesthetic values. Corals attract fish and seagrass provide shelter for fauna, as well as an important resource for dugongs.
Shoreline habitats	Indigenous peoples identify shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified resources, and potential nursery for turtles. Literature notes mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that Ngarda-Ngarli use mangrove seeds as a resource.

13.1.4 Marine parks

Woodside acknowledges Commonwealth and State marine park management plans have sought to recognise cultural values and responsibilities of Indigenous groups. AMPs describe this framework in the following way: “when making decisions about what can occur in marine parks and what action we will take to protect AMPs, we take values into account”. AMPs summarise these values as natural, cultural, heritage and socioeconomic values (see Section 12.5).

13.1.5 Indigenous Protected Areas

IPAs are areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. IPAs are an essential component of Australia’s National Reserve System, which is the network of formally recognised parks, reserves and protected areas across Australia (DCCEEW 2026b).

IPAs play a critical role in conserving Australia’s marine environments by enabling Aboriginal and Torres Strait Islander peoples to continue their long-standing stewardship of Sea Country. These Indigenous-led governance systems strengthen environmental management, uphold cultural responsibilities, and provide effective, place-based frameworks for caring for coastal and marine ecosystems. IPAs also support greater recognition of Indigenous rights and knowledge in marine management and offer pathways for improving co-management across Australia’s protected areas (Isaac *et al.* 2024).

As of March 2026, there are 95 dedicated IPAs spanning over 108.5 million hectares, with 6.8 million hectares of sea covered by IPAs. These account for more than 54% of the National Reserve System (DCCEEW 2026b). As of the 1 April 2026, DCCEEW will administer the IPA program.

There are 11 IPAs identified within the NWMR; ten overlap the Browse activity area and two overlap the NWS/Scarborough activity area, with the Yawuru IPA overlapping both the Browse and NWS/Scarborough activity areas, as listed in Table 13-2 and shown in Figure 13-4. IPAs in the NWMR are described in the next subsections.

Table 13-2: Indigenous Protected Areas within the NWMR

IPA	Woodside activity area		
	Browse	NWS/Scarborough	North West Cape
Balanggarra	✓	-	-
Bardi Jawi	✓	-	-
Dambimangari	✓	-	-
Karajarri	✓	-	-
Karajarri Jurarr Ngurra – Sea Country	-	✓	-
Mayala	✓	-	-
Nyangumarta Warrarn	✓	-	-
Nyul Nyul	✓	-	-
Uunguu	✓	-	-
Wilinggin	✓	-	-
Yawuru	✓	✓	-

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13.1.5.1 Balanggarra

The Balanggarra IPA was dedicated on 7 August 2013. It spans over one million hectares of land and Sea Country in the Kimberley region and has been home to the Balanggarra people for thousands of years. The five big rivers of the north Kimberley intersect on Balanggarra Country. These are the King River, Forest River, Pentecost River, Durack River and Ord River. The region also borders the Cambridge Gulf and Timor Sea. Three species of vulnerable sawfish are found in the waters of this region (Kimberley Land Council n.d.).

Nine targets identified in the Balanggarra Healthy Country Plan 2012–2022 are:

- Balanggarra law and culture
- our *Gra* (Country, including land, sea, rivers and islands)
- cultural sites (rock art sites, burial sites, heritage places)
- native animals
- accessible bush tucker and medicine plants
- right-way fire
- freshwater (places and freshwater fish)
- saltwater fish and seafood
- migratory saltwater species (turtle, dugong, whales, dolphins).

The Balanggarra Rangers manage 1,000 km of river and sea frontage on their Country to manage, protect and enhance its unique biodiversity values (Balanggarra Aboriginal Corporation 2011).

13.1.5.2 Bardi Jawi

Bardi Jawi IPA is 160 km north of Broome and covers 1,269.9 km² of land and Sea Country (National Indigenous Australians Agency (NIAA), n.d.-c). The main communities on Bardi Country are Djarindjin, Lombadina and Ardyaloon (One Arm Point). Bardi people live on the mainland of the Dampier Peninsula and islands immediately offshore from Ardyaloon. Jawi people call the islands further east, including Iwany (Sunday Island), their Country. Today people live in outstations spread along the mainland Peninsula coastline (Kimberley Land Council/Bardi Jawi Niimidiman Aboriginal Corporation RNTBC 2013).

During the IPA consultation process, the Bardi Jawi Rangers guided meetings with individual family groups to identify what they considered important to look after. An IPA steering committee was formed, who contributed cultural knowledge to the Bardi Jawi Indigenous Protected Area Management Plan (2013–2023). They were assisted by The Nature Conservancy in conservation action planning. This plan highlights targets to be protected on Country:

- marnany (fringing reefs)
- aarli (fish)
- odorr (dugong) and goorlil (turtle)
- significant sites, language, law and culture
- traditional oola (water) places
- Indigenous plant resources (Kimberley Land Council/Bardi Jawi Niimidiman Aboriginal Corporation RNTBC 2013).

Jardagarr (coastal Country) is classed under IUCN Category 4, and Niimidiman (inland Country) is classed under Category 6. Niimidiman harbours many plant and animal species of high cultural value. For example, irrgil trees are used for making boomerangs and marrga, joolgirr and bilimangard trees are used for making shields. Some Niimidiman areas feature traditional oola (water) places and the stories attached to these places are culturally important. Ecological values of the Jardagarr (coastal) Country include many species of native garrabal (birds), including eastern curlews and fork-tailed swifts (Kimberley Land Council/Bardi Jawi Niimidiman Aboriginal Corporation RNTBC 2013).

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13.1.5.3 Dambimangari

Dambimangari IPA is between Broome and Darwin, stretching east to the Prince Regent area. It covers 6,422.94 km² of landscape, including open grasslands, eucalyptus woodlands, intertidal flats and rocky reefs and shoals (NIAA, n.d.-d). Dambimangari is the traditional home of the Worrarra people. Dambimangari peoples' identity is interwoven with the sea and its reefs and islands. Reefs are important hunting grounds for jaya (saltwater fish) and warliny (dugongs).

The targets for protection are identified in the Dambimangari Healthy Country Plan 2012–2022 as:

- cultural sites
- reefs, beaches and islands
- saltwater fish
- turtles and dugongs
- whales and dolphins
- rivers, waterholes, waterfalls and wetlands (freshwater systems)
- culturally important native animals
- bush fruits and medicine plants
- right-way fire (Dambimangari Aboriginal Corporation 2012).

Jurluwarra (saltwater turtles) and warliny (dugongs) are culturally important to Dambimangari people as a food source. Cultural sites include rock art sites, stone arrangements, burial sites and important camping beaches that were used for resting when travelling through saltwater Country (Dambimangari Aboriginal Corporation 2012).

13.1.5.4 Karajarri

Karajarri IPA was dedicated in 2014 to manage, protect and enhance Karajarri Country. The IPA covers nearly 25,000 km² of land in the southern Kimberley, including 130 km of coastline stretching from Gordon Bay to Cape Missiessy. It comprises extensive coastlines, tidal creeks and wetlands as well as arid Country that stretches into the Great Sandy Desert (NIAA n.d.-a).

Karajarri people want to ensure areas of cultural and natural significance are looked after correctly according to their own protocols, and they view their environmental responsibilities as Palanapayana Tukjana Ngurra, meaning "everybody looking after Country properly" (Karajarri Traditional Lands Association (KTLA) 2014a).

The IPA includes two zoning categories to help manage Country: IUCN Category 2 (national park) and Category 6 (protected area with sustainable use of resources). The Category 2 zoning allows for the area to become part of an integrated system of protected areas, with Eighty Mile Beach to the south and Roebuck Bay to the north of the IPA (KTLA 2014a).

To assist in planning and developing the IPA, KTLA developed a Healthy Country Plan, which provides direction for addressing threats and for working on priorities for land and cultural site management (KTLA 2014b).

The Tukujana pa Karajarri Kura Jurrar IPA has been announced under the Sea Country IPA program, extending from the existing Karajarri IPA into the sea off the south-west Kimberley coast (DCCEEW 2023b). The area includes a network of coastal habitats, such as intertidal and subtidal reefs, mangrove systems, lagoons and tidal creeks, and connects the Ramsar sites of Roebuck Bay and Eighty Mile Beach (DCCEEW 2023b).

13.1.5.5 Karajarri Jurarr Ngurra – Sea Country

On 3 March 2026, the Karajarri Jurarr Ngurra Sea Country IPA was declared near Bidyadanga, Kimberley, WA. The Sea Country IPA spans over 237,489 ha and sits next to the Karajarrii native title area and the already declared Karajarri IPA. It includes Eighty Mile Beach State and Commonwealth marine parks and links land and marine protected areas across the south-west Kimberley region (DCCEEW 2026b).

The Karajarri Jurarr Ngurra Sea Country IPA holds a range of cultural and ecological values, including important species, habitats, places, and unique cultural knowledge and practices. Threatened and culturally

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important species include turtles, dugongs, sawfish, dolphins and migratory shorebirds. The IPA contains important habitats that support high biodiversity that store large amounts of blue carbon, and include beaches, dunes, tidal creeks, estuaries, kunturunkarra/mangroves, mudflats, reefs, seagrass beds and rocky headlands. There are also culturally significant areas that provide food, wild oyster farming, and riji (carved pearl shell) traditions, which are recognised in the National Heritage listing of the West Kimberley (DCCEEW 2026b).

13.1.5.6 Mayala

The Mayala IPA spans most of Mayala Country, with over 375,848 ha that overlaps the Mayala Marine Park and part of the Kimberley Marine Park. The Country features extensive networks of hundreds of islands, reefs, submerged lands, sandbars, seabeds and saltwater in the Buccaneer Archipelago and King Sound of the West Kimberly region. The area contains culturally significant places for ceremony, sites for stone tools, middens, ochres and clays used for ceremonial purposes, engravings, stone arrangements and fish traps. The large tidal ranges in the region create unique marine environments that contain unique high biodiversity values. Sea Country values include large coral reefs, sea turtles, humpback whales, sharks, sailfish and whale sharks. There are large estuaries and mangrove communities that are important nursery grounds for marine life. The IPA also contains habitat and breeding grounds for migratory and threatened ocean species, including sea turtles, dugongs and sawfish (Mayala Inninalang Aboriginal Corporation RNTBC 2024).

13.1.5.7 Nyangumarta Warrarn

The Nyangumarta Warrarn IPA comprises four areas totalling about 28,675 km², including parts of the Great Sandy Desert, Walyarta Conservation Reserve, Kujungurru Warrarn Conservation Reserve Area and the Eighty Mile Beach Marine Park Intertidal Area. The Traditional Owners of the designated IPA self-identify as and are identified by other Pilbara Indigenous people as Nyangumarta people. Nyangumarta people are the native title holders of the land and waters.

Ecological values in the IPA include a complex wetland system associated with Mandora Marsh, known to Nyangumarta people as Nyamaring. Walyarta (or Salt Creek). The Mandora Marsh area holds the most inland distribution of mangroves in Australia and the mound springs associated with Mandora Marsh area, such as Yalayala (Eil Eil), are recognised as important bird nesting sites (Nyangumarta Warrarn Aboriginal Corporation & Yamatji Marlpa Aboriginal Corporation, 2015).

13.1.5.8 Nyul Nyul

The Nyul Nyul IPA was officially dedicated in May 2025, spanning 144,493 ha of land that is rich in cultural and ecological value. The IPA protects important freshwater springs, monsoon vine thickets, and threatened species such as the greater bilby and short-nosed sea snake. The IPA provides important cultural connection and wellbeing to the Indigenous people of the Nyul Nyul Country (Australian Public Service Commission 2025).

13.1.5.9 Uunguu

Stage one of the Uunguu IPA was declared on 23 May 2011, coinciding with the native title determination and release of the Healthy Country Plan. The IPA covers 7,598.06 km². It has been home to the Wunambal Gaambera people for many thousands of years and is part of the Wanjina Wunggurr culture. Wunambal Gaambera people call their Country Uunguu – “our living home”. Two of the reserves extend to the low water mark at Bougainville Peninsula, Vansittart Bay, Anjo Peninsula, Napier Broome Bay and islands in Rothsay Water (Wunambal Gaambera Aboriginal Corporation (WGAC) 2017). A Saltwater IPA Plan of Management was created in 2017 as a sub-plan to the Wunambal Gaambera Healthy Country Plan (WGAC 2017).[20]

Ten targets identified in the Wunambal Gaambera Healthy Country Plan are:

- Wanjina Wunggurr law – our culture
- right-way fire
- aamba (kangaroos and wallabies) and other meat foods
- wulo (rainforest)

[20] Marine areas were proposed to be added to the Uunguu IPA as an IUCN Category VI (Managed Resource) Protected Area, early in 2018.

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- yawal (waterholes)
- bush plants
- rock art
- cultural places on islands
- fish and other seafoods
- mangguru (marine turtles) and balguja (dugongs) (WGAC 2010).

The Uunguu Rangers look after land and Sea Country through pest control, visitor management, cultural heritage conservation, flora and fauna monitoring and fire management (NIAA n.d.-d).

13.1.5.10 Wilinggin

The Wilinggin IPA spans over 2.4 million hectares of remote Country in the central north Kimberley region and was declared in 2013. It includes basalt ranges and sandstone cliffs that rise 250 m high. The area has wooded grasslands, pockets of rainforest, extensive mangrove systems, tidal mudflats, rivers, creeks and billabongs. The Ngarinyin people are the Traditional Owners of this area and have lived on Wilinggin Country for thousands of years (NIAA n.d.-e). Wilinggin Country is mostly landlocked, apart from two small saltwater areas: Walcott Inlet and Prince Frederick Harbour.

Seven targets identified in the Wilinggin Healthy Country Plan 2023–2032 are:

- becoming strong on Country
- food and medicine plants
- bushfire
- law and culture sites
- law and culture
- freshwater places
- wildlife and bush meats.

The Wunggurr Rangers are caretakers of the unique natural and cultural values of Wilinggin Country (Wilinggin Aboriginal Corporation 2022).

13.1.5.11 Yawuru

The Yawuru IPA was dedicated by Yawuru people in 2017, covering 2,109 km² of Yawuru coastal and inland Country (Yawuru RNTBC 2014). The Yawuru people are the native title holders of their land and sea – their ancestors have lived along the foreshores of Roebuck Bay, across the Pindan Plains and inland along the fringes of the Great Sandy Desert for thousands of years (NIAA n.d.-b).

The Yawuru IPA is managed under the Walyjalajala nagulagabu birrangun buru Plan of Management for 2017–2026 (Yaruwu RNTBC 2014). The plan includes eight targets for management:

- Yawuru cultural knowledge and practice
- Yawuru significant areas
- Yawuru rights and responsibilities
- niyamarri – sand dunes
- bilarra – wetlands
- birra – bush and pindan Country
- nagulagun – saltwater Country (deep water and intertidal)
- seasonal resources and biodiversity.

Cultural values include Yawuru named sites, tracks and areas, historical sites associated with pearling and pastoral industries, archaeological sites and traditional bush/sea resources. Ecological values include reefs

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and seagrass beds that provide habitat for dugongs (*Dugong dugon*) and EPBC Act listed threatened sea turtle species, including hawksbill turtles (*Eretmochelys imbricata*), loggerhead turtles (*Caretta caretta*), green turtles (*Chelonia mydas*) and flatback turtles (*Nataden depressus*). Roebuck Bay is a Ramsar site and has a known population of snubfin dolphins (*Orcaella heinsohni*) (Figure 8-6). Other ecological values include pearl shell beds for pearl oysters and habitat for a range of EPBC Act listed threatened species (Yaruwu RNTBC 2014).

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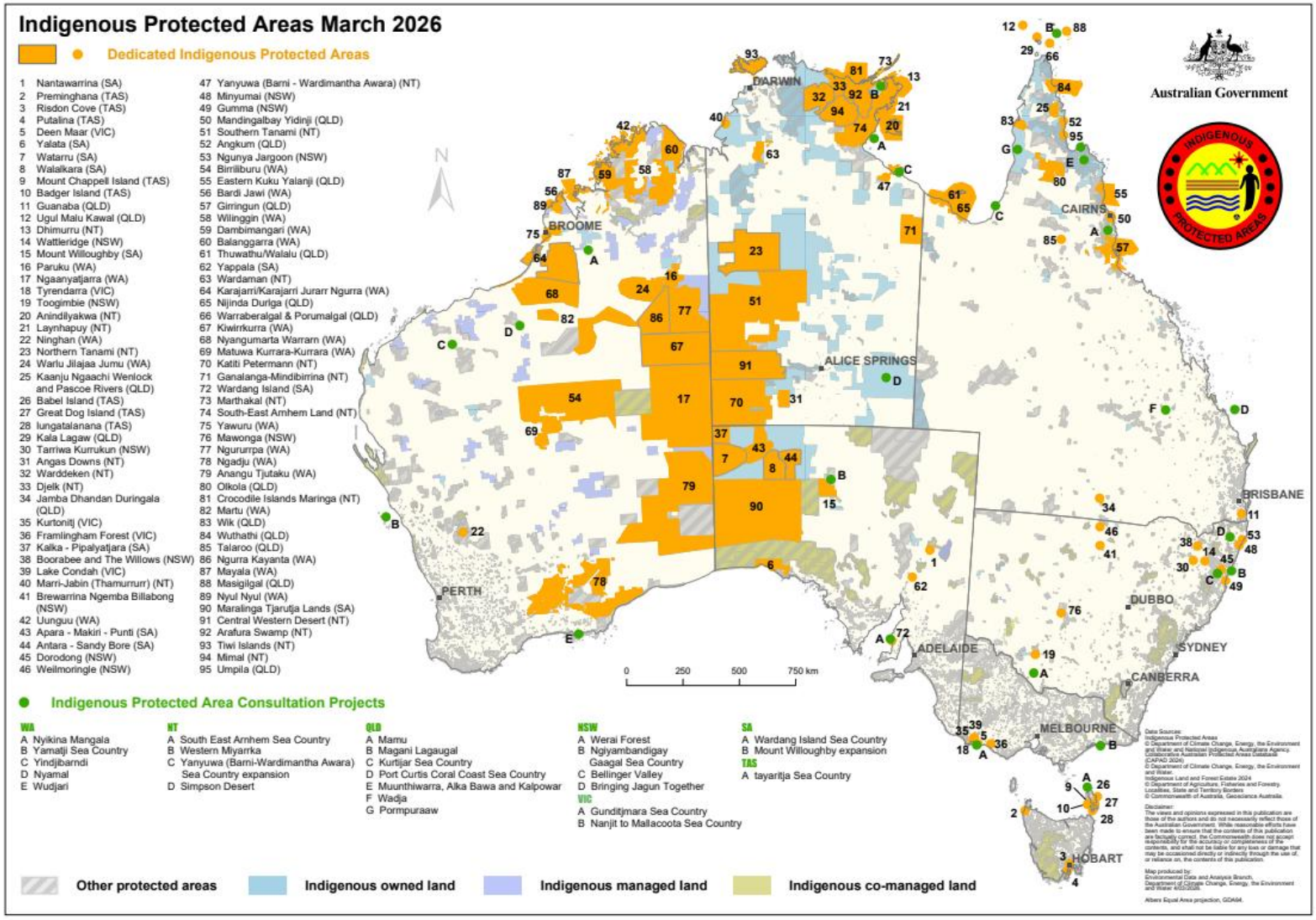


Figure 13-4: Indigenous Protected Areas in Australia

Source: DCCEEW (2026c)

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13.1.6 Indigenous cultural heritage

On 15 November 2023, the *Aboriginal Heritage Act* (WA) was restored as the legislation that manages Aboriginal heritage in WA (DPLH 2024). Under section 17 of that Act it is an offence to excavate, destroy, damage, conceal or alter any Aboriginal site without authorisation. Where there is a risk of injury or desecration to a significant Aboriginal area, even where permitted under the Act, any Aboriginal person may apply to the federal Environment Minister for a declaration under sections 9 or 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act* (Commonwealth) to protect and preserve that area.

Woodside understands communal cultural connection exists between Traditional Custodians and land and waters. It is understood from the onshore archaeological record that Indigenous people have occupied the Australian continent for at least 65,000 years (Clarkson *et al.* 2017) and in many places maintain a strong continuing connection that is said to extend back in Indigenous cosmology to the beginning of time.

Archaeological sites identified onshore that have the potential to be preserved in intertidal or submerged locations include petroglyphs, fish traps and artefact scatters or burials contained within sand dunes. As archaeological sites, these features have archaeological value that relate to preserving their fabric (as in, the tangible features) and their context (as in, their location and relationship to other archaeological and natural features). Archaeological sites may also have intangible dimensions (ICOMOS 2013), cultural values that exist in addition to their archaeological or scientific value.

Intangible values are a living expression of cultural heritage that is prevalent across generations. These values can be traditional. They can also be new and living at the same time. An understanding of the intangible cultural heritage of different Indigenous communities helps with intercultural dialogue and encourages mutual respect (UNESCO 2011). Intangible cultural heritage is safeguarded through practicing and passing on knowledge or expressions by the people to whom it belongs (UNESCO 2003). Table 13-3 provides context to common intangible themes that exist in Indigenous communities.

Table 13-3: Intangible heritage values associated with Sea Country

Value	Details
Songlines	Indigenous people often describe oral songlines as the law of the land and make up part of the Dreaming (Neale and Kelly 2020:30). Songlines are viewed in western academia as a framework for relating people to land. They consist of a series of invisible, interconnected routes across the landscape that mark significant sites for Indigenous people (Higgins 2021:723). Songlines demonstrate Indigenous peoples' strong connections to land by revealing sacred knowledge that is place specific (Roberts 2023:5). The land's physical features are instrumental in maintaining songlines because this is how ancestral spirits journeyed through and interacted with the physical landscape, leaving sacred knowledge behind. The interconnection between the physical and spiritual is where songlines become intrinsically tied to significant places across Country. As a result, geographical landforms are recorded within songlines and become sacred places. Such landforms can include rocks, mountains, rivers, caves and hills (Higgins 2021:724). Songlines can become lost, fragmented or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). It is important to protect physical sites identified as comprising a component of a songline, to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. In Australia, songlines can stretch thousands of kilometres, making up a complex and organic network of stories containing cultural knowledge of Indigenous communities across the land (Neale and Kelly 2020:35). Songlines can also extend out to Sea Country and contain cultural knowledge that is tied to geographic features, atmospheric phenomena and marine plants and animals. Often songlines containing references to a seascape or Sea Country mention mythical events around marine life, fishing areas, submerged rocks or coral. Songlines that embody seascapes can reflect how a group may relate to, or value, Sea Country. For example, connections to nearby islands they once inhabited in their songlines (Smyth and Isherwood 2016:307). Songlines can also be used as proof of long-standing connection to land and support a legal entitlement to land rights (Higgins 2021:74). Examples where songlines contain strong references to Sea Country are more common in Pacific Islander and Torres Strait Islander communities, who often refer to seascapes and skylines in their songlines to communicate sacred knowledge that assists in safe navigation of the ocean (Neale and Kelly 2020:83-84).

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Value	Details
Creation/Dreaming sites, sacred sites and ancestral beings	The only published sources Woodside found with detailed descriptions of the location of ancestral beings or Creation/Dreaming or sacred sites place these on land, or within inland water sources such as rivers and pools. However, some ancestral beings are noted to live within or originate from the sea generally, and some Creation stories talk to the creation of features from or in the sea. Additionally, every place on shore or at sea must be assumed to have been created on some level in Indigenous cosmology.
Cultural obligations to care for Country	Caring for Country collectively refers to the cultural obligations of individuals and groups, as well as rituals and ceremonies required for the physical and spiritual health of the environment. In the literature Woodside reviewed, caring for Country was noted to include maintenance of the physical environment and ecosystem. It may also have cultural, spiritual and ritual dimensions, such as caring for ancestral beings or ensuring cultural safety. Thalu are places where what are known as 'increase ceremonies' are performed to enhance or maintain populations of plants, animals or phenomena. All mentions of active ceremonial sites were confined to onshore locations, though the values may extend offshore where, for example, a thalu relates to marine species populations.
Knowledge of Country/customary law and transfer of knowledge	Knowledge of and familiarity with the features of Sea Country are itself a value. The inherent potential for restricted or secret knowledge makes this difficult to assess, even through consultation with Traditional Custodians. However, aspects such as limitations on access to sites or disruption or relocation of Indigenous communities may have implications for preserving Indigenous knowledge. Further, connection to Country may be damaged where people are displaced or disrupted (such as during colonisation) or where there is a loss of technical skills or environmental knowledge (McDonald and Phillips 2021). Transfer of knowledge includes continuing traditional practices to pass on practical skills. This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).
Connection to Country	This describes the multi-faceted relationship between Indigenous people and the landscape, which is envisioned as having personhood and spirit. It is also an aspect of personal identity for many Indigenous people. In the case of Sea Country, this can mean identifying as a Saltwater person, where "essence of being a 'Saltwater' person is ontological… it is about how people relate spiritually to the sea and engage with spiritual forces that created it, the marine flora and fauna and people" (McDonald and Phillips 2021).
Access to Country, including Sea Country	Access is necessary for continuing other values, including caring for Country, carrying out cultural practices and transferring traditional knowledge. Being on Country can be an important way of expressing or maintaining connection to Country (Australian Indigenous HealthInfoNet n.d.). Access is also a value in its own right, as a continuation of traditional Sea Country access and use.
Kinship systems and totemic species	Individuals may have kinship to specific species (Smyth 2008; Juluwarlu 2004) and a responsibility to care for species (Muller 2008). Kinship arises from totemic associations within Indigenous 'skin group' systems. It is forbidden for an individual to kill or eat a species who is from the same 'skin group' (Juluwarlu 2004). They may also have certain obligations linked to the discussion of caring for Country above. It is assumed marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood these relationships do not prohibit people outside of that 'skin group' from hunting or eating that same species (Juluwarlu 2004).
Resource collection	Multiple marine species are identified through consultation and literature as important resources, particularly as food sources (see Section 13.1.4). In addition to their immediate value as sustenance, gathering and preparing these resources are informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations.

13.1.6.1 Underwater cultural heritage

It is understood the sea level has risen significantly during the 65,000 years of Indigenous occupation, and areas that were once inhabited are now submerged on the continental shelf (Veth *et al.* 2019; University of Western Australia (UWA) 2021). Sea levels began to rise about 18,000 years ago, which flooded the coastal plain and forced further inland those who dwelled on the coast (Smyth 2007). At its lowest level during Indigenous occupation, the sea was between 125 m (O'Leary *et al.* 2020; Veth *et al.* 2019; Williams *et al.* 2018) and 130 m below current levels (Benjamin *et al.* 2020; Benjamin *et al.* 2023; UWA 2021). Oral traditions in Australia have mapped maritime activity and changes in coastal environments back to the Holocene period, with many Indigenous stories along the northern Australia coast highlighting seafaring,

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voyages, and the coastal environments that were encountered and created in the area. These oral traditions form the intangible cultural heritage of Sea Country, which also holds knowledge of the sea level rise and change in marine environments (Farr 2025).

Archaeological material preserved on the Ancient Landscape has the potential to provide more information about the earliest periods of human occupation (Veth *et al.* 2019; UWA 2021).

Recent archaeological discoveries demonstrate the now submerged landscape was occupied and inhabited and may retain archaeological material from this time (Benjamin *et al.* 2020; Benjamin *et al.* 2023; see Ward *et al.* 2022 for an opposing view).

Certain landscapes have been identified as archaeologically prospective on the submerged Ancient Landscape, including:

- submerged water sources (rivers, waterholes, tidal channels and seeps) that have an increased likelihood of use or habitation as past generations used the associated resources (UWA 2021)
- submerged calcarenite ridges younger than human occupation of the continent, which may have formed over and protected artefacts *in situ* (Veth 2019)
- prominent landscape features (such as hills, particularly of igneous rock formations) that may have been focus areas for cultural activity (UWA 2021)
- karst depressions and other ‘catch points’ where artefacts may accumulate after disturbances caused by inundation (UWA 2021; Nutley 2022; Nutley 2023a)
- Madeleine Shoals, specifically identified by MAC as an archaeologically prospective feature due to its igneous rock formations, which have the potential to contain petroglyphs.

The sites considered most likely to survive inundation, based on the review of existing literature, were logically the more robust forms, including:

- midden and artefacts within cemented dunes, relict water holes, and beach rock deposits
- quarry outcrops, extraction pits, and associated reduction debris in fine-grained volcanic outcrops
- curvilinear stone structures and standing stones sitting on volcanic pavements and jammed into volcanic rock piles
- lag deposits of artefacts and possibly midden on hardpan in suitable landscape contexts with good preservation conditions; for example, shallow declination shorelines in sheltered passages of the inner archipelago or on the leeward side of hard-rock/fringing reef causeways adjacent to the outer islands
- small overhangs and shelters with preserved deposits, facing away from the dominant wave and wind action (Veth *et al.* 2019).

Recognising this, Woodside considers the Ancient Landscape between the mainland and the ancient coastline at 125 m depth contour KEF (Figure 13-5) as an area where potential Indigenous archaeological material may exist on the seabed, as this covers the full extent of this possible occupation. Known places, including archaeological sites, may be protected subject to declarations under the *Aboriginal and Torres Strait Islander Heritage Protection Act*, *Underwater Cultural Heritage Act 2018* or EPBC Act. However, these Acts only extend protection to Indigenous heritage places specified by declaration or otherwise included on a statutory list. Woodside understands there is currently no Indigenous archaeology known to exist within Commonwealth waters and no areas subject to declarations or prescriptions under these Acts.

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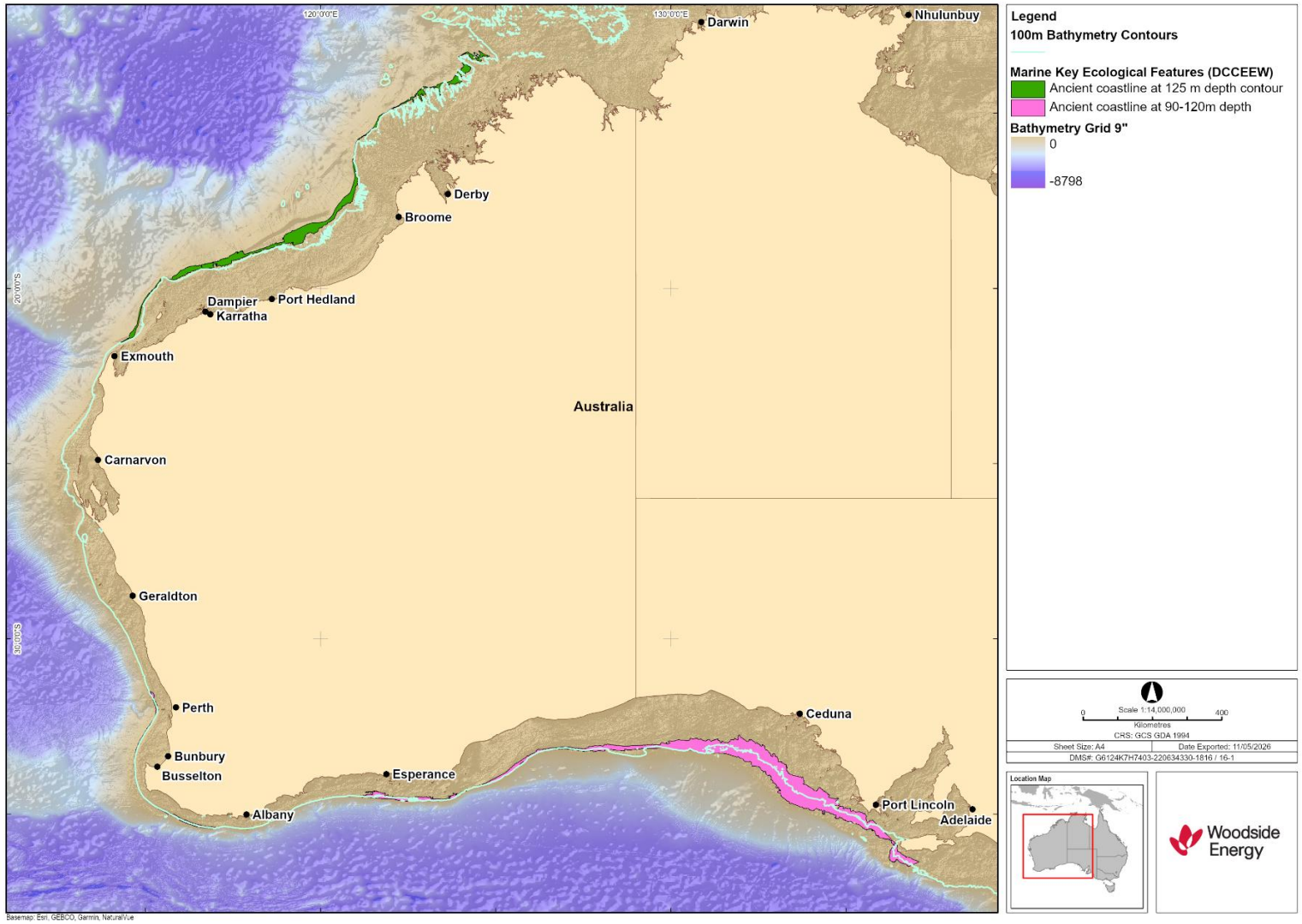


Figure 13-5: Indicative bathymetry of the ancient submerged landscape

Source: Geoscience Australia (2026); DCCEEW (2024b)

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13.1.6.2 Indigenous sites of significance

Murujuga (the Burrup Peninsula) has a very high density of significant Indigenous heritage sites and places with tangible and intangible heritage values. These places are linked to Indigenous cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by Traditional Custodians.

The MCL is a UNESCO World Heritage inscribed property. The Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List in 2007 due to outstanding heritage values relating to Australia's cultural history contained in the large number, density, diversity, distribution and fine execution of rock art. The values of MCL and the Dampier Archipelago National Heritage place are described in Section 12.2.1 and Section 12.9.

DPLH maintains an Aboriginal Cultural Heritage Register of registered sites and heritage places on the Aboriginal Cultural Heritage Inquiry System. There are over 1,600 registered sites on Murujuga and the Dampier Archipelago, with around 1,100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the EPBC Act. Murujuga National Park is managed under the *Conservation and Land Management Act* (WA).

13.1.7 Historic sites of significance

Places of historic cultural significance are protected under Commonwealth, State and local regimes. Places inscribed on the National or World Heritage List are protected through various provisions of the EPBC Act. Historic places may also be protected under the *Heritage Act 2018* (WA); under section 129 of this Act, the prohibited alteration, demolition, damage, despoilment or removal of objects from a registered place may result in a fine of A$1 million. Protection of heritage by local government typically emanates from local planning schemes produced under Part 5 of the *Planning and Development Act 2005* (WA).

Historical sites of significance and heritage value are found along adjacent foreshores of the NWMR, SWMR and NMR.

13.1.8 Historic underwater heritage

The remains of vessels and aircraft in Commonwealth waters, along with any associated article, are automatically protected under the *Underwater Cultural Heritage Act* (Commonwealth) after 75 years. This is applicable whether the existence or location of the article is known or unknown, as per section 16 of the Act. Other articles of underwater cultural heritage may be declared for protection as outlined in section 17 of the Act. Remains and relics of any ship lost, wrecked or abandoned in WA waters before the year 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

There are no known National Heritage listed shipwrecks in the NWMR or NMR (Figure 13-6). The only known National Heritage listed shipwrecks are within the SWMR and include:

- the HMAS Sydney II
- the HSK Kormoran
- the Batavia.

Known historical shipwreck sites in WA waters are listed in the WA Maritime Museum Shipwreck Database (Western Australian Museum 2026). Known historical shipwreck sites in Commonwealth waters are listed in Australasian Underwater Cultural Heritage Database (DCCEEW 2026d). These databases only cover known historical sites. Figure 13-6 shows known shipwrecks for the NWMR as listed in these databases.

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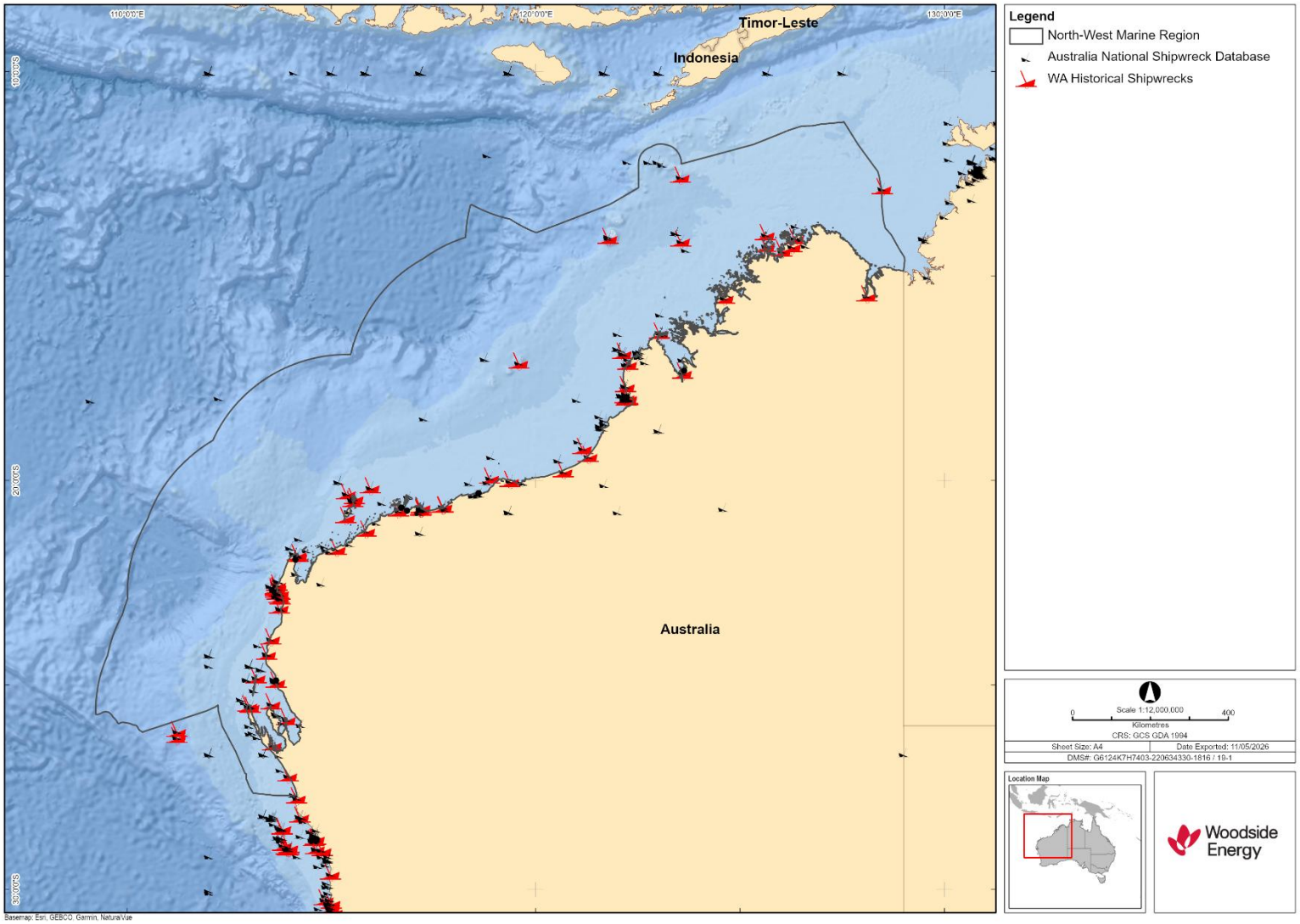


Figure 13-6: Shipwrecks in the NWMR

Source: Western Australian Museum (2026); DCCEEW (2026d)

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13.2 Socioeconomic values

Socioeconomic values include commercial and traditional fishing, tourism, recreation, shipping, oil and gas activities and defence activities.

13.2.1 Commercial fisheries – Commonwealth and State

The Australian Fisheries Management Authority (AFMA) manages fisheries on behalf of the Commonwealth Government and is bound by objectives under the *Fisheries Management Act 1991* (Commonwealth).

WA State commercial fisheries are managed by the WA Department of Primary Industries and Regional Development (WA DPIRD) under the *Fish Resources Management Act 1994* (WA), Fisheries Resources Management Regulations 1995 (WA), relevant gazetted notices and licence conditions, and applicable fishery management plans.

Commonwealth and State managed fisheries that are licenced to operate within the NWMR are summarised in Table 13-4 and Table 13-5, respectively. Commercial fisheries with activity in the NRMW are shown in Figure 13-7 to Figure 13-11.

Western Australia demersal fishing reforms

From January 2026, the Government of Western Australia has introduced demersal fishing reforms to manage and protect at-risk demersal fish species, to help stocks recover for future generations within the boundaries of the fishing bioregions, as defined by DPIRD (2025a). These demersal fishing reforms may affect the commercial and recreational fisheries interacting with Woodside activity areas, as described below.

North Coast bioregion

The DPIRD North Coast fishing bioregion includes the Pilbara and Kimberley regions and runs from Ashburton River south of Onslow to the border of WA and the NT (DPIRD 2026c).

Kimberley region

- Recreational and charter fishing will remain open.
- A 50% catch reduction for commercial fisheries applies from 1 January 2026 (DPIRD 2025a).

Pilbara region

- Recreational and charter fishing will remain open.
- A 50% catch reduction for commercial fisheries applies from 1 January 2026.
- Permanent closure of commercial trawl fishing for demersal scalefish applies from 1 January 2026 (DPIRD 2025a).

Gascoyne Coast bioregion

The DPIRD Gascoyne Coast fishing bioregion runs from the Zuytdorp Cliffs north of Kalbarri to the Ashburton River south of Onslow (DPIRD 2026c).

- Recreational, charter and commercial fishing will remain open (DPIRD 2025a).

West Coast bioregion

The DPIRD West Coast fishing bioregion runs from Black Point east of Augusta to the Zuytdorp Cliffs north of Kalbarri. This area includes the Houtman Abrolhos Islands (DPIRD 2026c).

- Recreational boat-based fishing for demersals did not reopen on 16 December 2025 and is scheduled to reopen in spring 2027 as an exclusively recreational fishing zone.
- Charter fishing for demersals in the metropolitan area closed from 16 December 2025, but charter fishing for demersals under the tag system will continue in the remainder of the West Coast bioregion under a reduced annual catch limit of 25 tonnes.
- Commercial fishing for demersals closed from 1 January 2026. This includes a permanent closure of gillnet fisheries and commercial line fishing south of Kalbarri, supported by a compulsory buyback of commercial fishing licences (DPIRD 2025a).

Table 13-4: Commonwealth managed fisheries

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside activity area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">North-west Slope Trawl Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5"></td><td>Management area</td><td colspan="3">The North-west Slope Trawl Fishery extends from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the Australian Fishing Zone (AFZ) (200 nm from the coastline, which is the boundary of the Australian EEZ) (Keller et al. 2025b; Smith et al. 2025).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Australian scampi (Metanephrops australiensis) and smaller quantities of velvet and Boschma’s scampi (M. velutinus and M. boschmai). A quantity of prawns is harvested each season, and squids are becoming an increasingly significant component of the catch.
Mixed snappers (Lutjanidae) and redspot emperor (Lethrinus lentjan) have historically been an important component of the catch (Blake et al. 2021).</td><td>Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson et al. 2017).</td><td>Typically depths of 350 to 600 m (Patterson et al. 2017).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">The North-west Slope Trawl Fishery began in 1985 and the number of active vessels peaked at 21 in the 1986–87 season, decreasing to between one and six vessels per year since 2005–06 (Keller et al. 2025b).
A total catch of 85.94 t was recorded in 2023–24, an increase from 85.34 t in 2022–23 (Keller et al. 2025b). Of the total catch, the Australian scampi made up about 65.3% in 2023–24 (56 t), up from 52% in 2022–23 (44 t). Other scampi species made up only 0.4% (369 kg) of the total catch in 2023–24, down from 10% in 2022–23 (9 t) (Keller et al. 2025b).
The stock assessment of scampi in the fishery is classified as not subject to overfishing (Keller et al. 2025b).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Three vessels operated in each of the 2022–23 and 2023–24 seasons. Trawl-hours increased from 4,351 in 2022–23 to 4,555 in 2023–24 (Keller et al. 2025b).</td></tr>
</table>

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside activity area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">Southern Bluefin Tuna Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The Southern Bluefin Tuna Fishery covers the entire EEZ around Australia, out to 200 nm from the coast. They do not fish in the Woodside activity areas.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Southern bluefin tuna (Thunnus maccoyii).</td><td>Longline, purse seine fishing, and minor line (troll and poling).</td><td>Southern bluefin tuna is a pelagic species that can be found to depths of 500 m (AFMA 2021a).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off SA during summer months, and by longline off the New South Wales coastline during winter months (Patterson et al. 2025a).
The Southern Bluefin Tuna Fishery is shared among countries. Australia currently has a 35% share of the total global allowable catch. While wild capture fishing in Australia to sell directly to market can occur anywhere throughout the fishery’s range, currently most of that quota is value-added through ranching (on-growing the wild captured fish for an extra five to six months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed or sardines (40,000+ tonnes). North-west WA is critically important, regardless of how the quota is fished, because of the proximity to the single spawning ground of this global roaming species. Young fish (one to four years of age) move from the spawning ground in the north-east Indian Ocean into the Australian EEZ and southwards along the WA coast (Patterson et al. 2025a).
The stock is classified as not overfished (Patterson et al. 2025a).
A total of 6,325 t bluefin tuna catch was recorded for the 2023–24 fishing season, an increase from 6,034 t in the 2022–23 period (Patterson et al. 2025a). Of the total catch, 4,525 t were collected using purse seine and 1,799 t from pelagic longline.</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Five purse seine vessels and 27 longline vessels in the 2023–24 period, a decrease from six purse seine vessels and an increase from the 24 longline vessels in the 2022–23 period (Patterson et al. 2025a).</td></tr>
</table>

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside activity area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">Western Deepwater Trawl Fishery</td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The Western Deepwater Trawl Fishery is in deep water off WA, from the line approximating the 200 m isobath to the edge of the AFZ (Blake et al. 2021).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">More than 50 species, historically dominated by six commercial finfish species or species groups:
• orange roughy (Hoplostethus atlanticus)
• oreos (Oreosomatidae)
• boarfish (Pentacerotidae)
• eteline snapper (Lutjanidae: Etelinae)
• apsiline snapper (Lutjanidae: Apsilinae)
• sea bream (Lethrinidae).</td><td>Demersal trawl.</td><td>Water deeper than 200 m (Blake et al. 2021).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">The number of vessels active in the fishery and total hours trawled have fluctuated from year to year. Notably, total hours trawled were relatively high for a brief period during the early 2000s when fishers targeted ruby snapper and deepwater bugs (Patterson et al. 2020).
Total trawl hours have been variable but relatively low since 2005–06. In 2023–24, 15 trawl-hours were recorded in the fishery, up from 2022–23 when no effort was recorded, but down from the 76 trawl-hours recorded in 2021–22 (Keller et al. 2025a).
A total of 3.39 t of catch was landed in the Western Deepwater Trawl Fishery in 2023–24, comprising various finfish species including amberjack (29%), rubyfish – mixed (Plagiogeneion spp.; 24%) and rosy snapper (13%). No catch was recorded in 2022–23 and no deepwater bugs have been landed since 2019–20 (Keller et al. 2025a).
Ruby snapper and deepwater bugs stock are considered not subject to overfishing but the biomass status of deepwater bugs is classified as uncertain (Keller et al. 2025a).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Since 2004–05, one to three vessels have been active in the fishery, with one active vessel in 2023–24 (Keller et al. 2025a).</td></tr>
</table>

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<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside activity area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">Western Skipjack Tuna Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The combined western and eastern skipjack tuna (Katsuwonus pelamis) fisheries encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery extends westward from the SA/Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Western skipjack tuna (Katsuwonus pelamis).</td><td>Fishers use purse seine gear (about 98% of catch) and sometimes pole and line when fishing for skipjack tuna.</td><td>Western skipjack tuna is a pelagic species that can be found to depths of 260 m (AFMA 2021b).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">The Western Skipjack Tuna Fishery has not been actively fished since the 2008–09 season (Patterson and Dylewski 2024). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">No active vessels operating since 2009 (Patterson and Dylewski 2024).</td></tr>
<tr><td rowspan="5">Western Tuna and Billfish Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The Western Tuna and Billfish Fishery extends to the Australian EEZ boundary in the Indian Ocean.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Key species caught in the fishery are bigeye tuna (Thunnus obesus), yellowfin tuna (T. albacares) and swordfish (Xiphias gladius). Striped marlin (Kajikia audax) is a minor component of the catch. Catch of albacore (T. alalunga), a non-quota species, can approach levels similar to yellowfin tuna catch in some years (Blake et al. 2022).</td><td>Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used, and purse seine.</td><td>Species have a broad depth distribution, with tuna occurring at 150 to 300 m, striped marlin at 150 m and swordfish at up to 600 m (Bureau of Rural Sciences 2007).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">The fishery operates in Australia’s EEZ and high seas of the Indian Ocean. Fishing effort in recent years has been concentrated off south-west WA, with occasional activity off SA (Patterson et al. 2025b).
A total of 208 t catch was landed in the 2023–24 season, remaining the same from the 2022–23 period (Patterson et al. 2025b).
Striped marlin, bigeye tuna and yellowfin tuna are classified as subject to overfishing (Patterson et al. 2025b).</td></tr>
</table>

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Fishery	Woodside activity area			Description	
	Browse	*NWS/ Scarborough*	*North West Cape*		
				Active licences/ vessels	Four pelagic longline and three minor line vessels were active during the 2023–24 season (Patterson *et al.* 2025b).

Table 13-5: State managed fisheries

Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
Abrolhos Islands and Mid-West Trawl Fishery			✓	***Management area***	The Abrolhos Islands and Mid-West Trawl Fishery operates around the Abrolhos Islands within the SWMR.		
				Species targeted	***Fishing methods***	***Fishing depth***	
				Saucer scallops (*Ylistrum balloti*, formerly *Amusium balloti*).	Otter trawl.	Saucer scallops occur in inshore waters around 40 m depth at the Abrolhos Islands (Wilkin *et al.* 2024).	
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total landings in the 2023 season was 467 t meat weight (2,333 t whole weight) (Wilkin *et al.* 2024). The Abrolhos Islands and Mid-West Trawl Fishery did not fish in 2022 due to the stock being environmentally limited (Wilkin *et al.* 2023a). The fishery landed 123.1 t meat weight (615.1 t whole weight) in 2021.		
				Active licences/ vessels	The number of vessels is unreported. There were ten licences in 2021 (Kangas *et al.* 2023b).		

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
Broome Prawn Managed Fishery	✓			***Management area***	The Broome Prawn Managed Fishery operates off Broome and forms part of the North Coast Prawn Fishery.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Western king prawn (*Penaeus latisulcatus*), brown tiger prawns (*Penaeus esculentus*) and blue endeavour prawns (*Metapenaeus endeavouri*).		Low opening, otter prawn trawl systems.	Trawling is generally in waters between 30 and 60 m deep, but can occur down to 100 m (Department of Environment and Heritage 2004).
				Fishing effort	The total landings of the Broome Prawn Managed Fishery in the 2023 season were negligible (Koefoed *et al.* 2024a). The DPIRD State of the Fisheries annual reports indicate that no fishing efforts occurred in 2022 and extremely low fishing effort occurred in 2021, 2020 and 2019 (Wilkin *et al.* 2023b). The stock status of western king prawns is considered sustainable – adequate (Koefoed *et al.* 2024a).		
				Active licences/ vessels	Two boats undertook trial fishing activities in 2023 (Koefoed *et al.* 2024a).		
Exmouth Gulf Prawn Managed Fishery			✓	***Management area***	The Exmouth Gulf Prawn Managed Fishery operates within the sheltered waters of Exmouth Gulf. The fishery occupies a total area of 4,000 km², with only half of this area being trawled (Fletcher and Santoro 2015).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Western king prawn (*Penaeus latisulcatus*), brown tiger prawn (*Penaeus esculentus*), blue endeavour prawn (*Metapenaeus endeavouri*) and banana prawn (*Penaeus merguinensis*).		The fishery uses low opening, otter prawn trawl systems (Koefoed *et al.* 2024b).	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The Exmouth Gulf Prawn Managed Fishery landed 653 t in 2023, 898 t in 2022, 777 t in 2021, 673 t in 2020, 821 t in 2019, 880 t in 2018, 713 t in 2017 and 822 t in 2016 (Koefoed *et al.* 2024b). The total catch comprised 306 t of brown tiger prawns, 200 t of western king prawns, and 147 t of blue endeavour prawns (Koefoed *et al.* 2024b). Stock status of landed species is considered sustainable – adequate (Koefoed *et al.* 2024b).		

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside activity area</th><th rowspan="2">Description</th><th colspan="3">Fishery</th></tr>
<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/ vessels</td><td colspan="3">The number of participating vessels is six (Koefoed et al. 2024b).</td></tr>
<tr><td rowspan="5">Gascoyne Demersal Scalefish Managed Fishery</td><td rowspan="5"></td><td rowspan="5"></td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The Gascoyne Demersal Scalefish Managed Fishery is between the southern Ningaloo Coast to south of Shark Bay, with a closure area at Point Maud to Tantabiddi (Western Australian Fishing Industry Council).[21]</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Pink snapper (Chrysophrys auratus) and goldband snapper (Pristipomoides multidens).
Other demersal species caught include:
• tropical snappers
• emperors
• cods
• mulloway trevallies.</td><td>Mechanised handlines.</td><td>The target species inhabit waters deeper than 20 m (Jackson et al. 2021a).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years’ catch based on State of the Fisheries annual reports provided by DPIRD: The Gascoyne Demersal Scalefish Managed Fishery reported a total commercial catch of 145 t in 2023, 166 t in 2022, 164 t in 2020–21, 207 t in 2019–20, 173 t in 2018–19 and 210 t in 2017–18 (Jackson et al. 2024).
The total of commercial catches comprised 48 t of pink snapper, 69 t of goldband snapper, and 28 t of other mixed species (Jackson et al. 2024).
The stock status for pink snapper is considered recovering, with goldband snapper considered sustainable – adequate (Jackson et al. 2024).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Eight vessels fished during 2023, seven of which fished for more than ten days during peak pink snapper season (Jackson et al. 2024).</td></tr>
</table>

[21] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/.

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
Kimberley Crab Managed Fishery (formerly Kimberley Developing Mud Crab Fishery)	✓			***Management area***	The Kimberley Crab Managed Fishery is one of two small trap-based crab fisheries that exist in the North Coast bioregion between Cambridge Gulf and Broome (Gaughan and Santoro 2018). In November 2018, the fishery transitioned from developing to fully managed (Johnston *et al.* 2020b).		
					Species targeted	***Fishing methods***	***Fishing depth***
					Brown mud crab (*Scylla olivacea*) and green mud crab (*Scylla serrata*).	Trap. Exemption holders use crab traps and drop nets in waters adjacent to native title lands (Johnston *et al.* 2023).	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total crab landed was 0.45 t in 2023, 13.6 t in 2022, 9.7 t in 2021, 1.5 t in 2020, 3.2 t in 2018 and 7.4 t in 2019. In 2023, Kimberley Crab Managed Fishery landed a total catch of 0.45 t of brown mud crab, which represented the entire reported commercial mud crab catch (Harris *et al.* 2024). Mud crab species in the managed fishery is considered sustainable – adequate (Harris *et al.* 2024).		
				Active licences/ vessels	There is an allocation of 1,200 units (equivalent to 600 traps) to licence holders (Johnston *et al.* 2023). An equivalent allocation of 600 traps for commercial purposes was provided to Traditional Owner groups through the granting of non-transferable Instruments of Exemption under the *Fish Resources Management Act*.		
Mackerel Managed Fishery	✓	✓	✓	***Management area***	The commercial fishery extends from the West Coast bioregion to the WA/NT border. There are three managed fishing areas: Area 1: Kimberley (121ºE to the WA/NT border); Area 2: Pilbara (114ºE to 121ºE) and Area 3: Gascoyne (27ºS to 114ºE) and West Coast (Cape Leeuwin to 27ºS) (Lewis *et al.* 2020).		
					Species targeted	***Fishing methods***	***Fishing depth***
					Spanish mackerel (*Scomberomorus commerson*), grey mackerel (*S. semifasciatus*) and other species from the genus *Scomberomorus*.	Trolling, baits or lures cast, jigging (Lewis *et al.* 2020).	Information not available.

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Most of the catch is taken from waters off the Kimberley and Pilbara coasts (Lewis *et al.* 2020), reflecting the tropical distribution of mackerel species (Molony *et al.* 2015). Most fishing activity occurs around the coastal reefs of the Dampier Archipelago and Port Hedland area, with the seasonal appearance of mackerel in shallower coastal waters most likely associated with feeding and gonad development before spawning (Mackie *et al.* 2003). Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: 242 t in 2023, 213 t in 2022, 310 t in 2021, 290 t in 2020, 291 t in 2019, 214 t in 2018, 283 t in 2017, 276 t in 2016, 302 t in 2015 and 322 t in 2014 (Lewis and Rynvis 2024). The landed catch in 2023 was 225 t for Spanish mackerel and 16 t for grey mackerel (Lewis and Rynvis 2024). The commercial landings for other large pelagic species, such as the amberjack and cobia, were 19.7 t and 18.2 t, and other species contributed to the remaining <10 t of the total catch (Lewis and Rynvis 2024). All species stocks are sustainable – adequate (Lewis and Rynvis 2024).		
				Active licences/ vessels	There were 15 vessels in 2023, primarily from May to November (Lewis and Rynvis 2024).		
Marine Aquarium Fish Managed Fishery	✓	✓	✓	***Management area***	The Marine Aquarium Fish Managed Fishery can operate throughout WA State waters. The fishery is typically more active in waters south of Broome and higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier and Broome (Newman *et al.* 2021b). There has been recent effort in the waters from Broome northwards to the NT border (Newman *et al.* 2024b).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms), algae, seagrasses and 'live rock'. The resource potentially includes over 1,500 species of marine aquarium fishes (Newman *et al.* 2024b).	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Information not available.

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Total catch for the Marine Aquarium Fish Managed Fishery in 2023 was 107,786 fishes and invertebrates, 18 t of coral, live rock and living sand, and 272 L of marine plants and live feed (Newman *et al.* 2024b). In 2022, the total catch for the Marine Aquarium Fish Managed Fishery was 98,694 fishes and invertebrates, 17.83 t of coral, live rock and living sand, and 39 L of marine plants and live feed (Newman *et al.* 2024b). Dominant fish species caught in 2022 include spotted blenny (*Istiblennius meleagris*), scribbled angelfish (*Chaetodontoplus duboulayi*), black-axil chromis (*Chromis atripectoralis*), stripey (*Microcanthus strigatus*), Vachell's glassfish (*Ambassis vachellii*), margined coralfish (*Chelmon marginalis*), black-axil chromis (*Chromis atripectoralis*), and blue and yellow wrasse (*Anampses lennardi*) (Newman *et al.* 2024b). The breeding stocks of landed species are classified as sustainable – adequate (Newman *et al.* 2024b).		
				Active licences/ vessels	Twelve licences were active in 2023 across the Marine Aquarium Fish Managed Fishery and the Hermit Crab Fishery (Newman *et al.* 2024b).		
Nickol Bay Prawn Managed Fishery		✓		***Management area***	The Nickol Bay Prawn Managed Fishery operates in nearshore and offshore waters of the Pilbara region along the NWS. Trawling has been reported to occur at several locations along the Pilbara coast to the east of the Burrup Peninsula, including within the waters of Nickol Bay (Fletcher and Santoro 2015).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Banana prawn (*Penaeus merguiensis*), western king prawn (*Penaeus latisulcatus*), brown tiger prawn (*Penaeus esculentus*) and blue endeavour prawn (*Metapenaeus endeavouri*).		Low opening, otter prawn trawl systems.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The Nickol Bay Prawn Managed Fishery landed 89 t in 2023, 51 t in 2022, 123.4 t in 2021, 202.4 t in 2020, 254 t in 2019 and 81 t in 2018 (Koefoed *et al.* 2024a). Of the total landings in 2023, landings were dominated by 68 t banana, 15 t brown tiger, 4 t western king and 1 t blue endeavour prawns (Koefoed *et al.* 2024a). The banana prawn stock status within the Nickol Bay Prawn Managed Fishery is considered sustainable – adequate (Koefoed *et al.* 2024a).		

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Active licences/ vessels	There were five participating vessels in 2023 (Koefoed *et al.* 2024a).		
Northern Demersal Scalefish Managed Fishery	✓			***Management area***	The Northern Demersal Scalefish Managed Fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman *et al.* 2018). Area 1 permits line fishing only, between the high water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher *et al.* 2017; Smith, *et al.* 2025).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Goldband snapper (*Pristipomoides multidens*), blue-spotted emperor (*Lethrinus punctulantus*), red emperor (*Lutjanus sebae*) and rankin cod (*Epinephelus multinotatus*).		Handline, dropline and fish trap.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The Northern Demersal Scalefish Managed Fishery landed 1,450 t in 2023, 1,458 t in 2022, 1,544 t in 2021, 1,419 t in 2020, 1,507 t in 2019, and 1,297 t in 2018 (Wakefield *et al.* 2024). In 2023, most of the catch was landed from Zone B, with 1,233 t in 2023. The 2023 catch of jobfish group (*Pristipomoides spp*.) was 503 t, 91% of which was goldband snapper (Wakefield *et al.* 2024). The stock status of landed species in the managed fishery is classified as sustainable – adequate (Wakefield *et al.* 2024).		
				Active licences/ vessels	Eight active vessels in 2023 (Wakefield *et al.* 2024).		
Octopus Interim Managed Fishery	-	-	-	***Management area***	The Octopus Interim Managed Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Octopus djinda, which is closely related to *Octopus tetricus*.		Primary method is baited octopus trap (combination of active trapping via trigger mechanisms, and passive trapping – shelter traps) (Strain *et al.* 2024d).	Catches typically occur in nearshore waters of less than 20 m depths, but traps may be deployed in depths of up to 50 m (Desfosses *et al.* 2024.

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: Commercial catch for the Octopus Interim Managed Fishery was 777 t in 2023, 744 t in 2022, 487 t in 2021, 254 t in 2020, 453 t in 2019, 314 t in 2018, 257 t in 2017 and 252 t in 2016 (Strain *et al.* 2024d). In 2023, the total catch of octopus of 777 t live weight was a 4.4% increase from 2022 with a total catch of 744 t, due to one new vessel and increased use of trap allocations (Strain *et al.* 2024d). Octopus stock status in 2023 is considered sustainable – adequate (Strain *et al.* 2024d).		
				Active licences/ vessels	Twenty-eight active vessels in 2023 (Strain *et al.* 2024d).		
Onslow Prawn Managed Fishery		✓		***Management area***	The Onslow Prawn Managed Fishery encompasses a portion of the continental shelf off the Pilbara.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Western king prawns (*Penaeus esculentus*), brown tiger prawns (*Penaeus esculentus*), blue endeavour prawns (*Metapenaeus endeavouri.*		Low opening, otter prawn trawl systems.	Fishery and or fishing activity overlaps the Beadon Creek dredging scope (Sporer *et al.* 2015).
				Fishing effort	The total landings for the Onslow Prawn Managed Fishery for the 2023 and 2022 seasons are not available due to data confidentiality (Koefoed *et al.* 2024a). In 2021, the total catch was less than the target catch range of 60 t (Kangas *et al.* 2023a). Thirty-seven days of fishing took place in 2021, compared to 13 days in 2020 (Kangas *et al.* 2023a). The breeding stocks of banana, brown tiger and western king prawns are considered sustainable – adequate (Koefoed *et al.* 2024a).		
				Active licences/ vessels	One vessel was active in 2023 (Koefoed *et al.* 2024a).		

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
Pearl Oyster Managed Fishery	✓	✓	✓	***Management area***	The Pearl Oyster Managed Fishery is in shallow coastal waters, designated by four zones extending from Exmouth to Kununurra and the seaward boundary demarcated by the 200 nm EEZ. The fishery is currently managed under the *Pearling Act 1990* (Koefoed *et al.* 2024a).		
					Species targeted	***Fishing methods***	***Fishing depth***
					Silver lipped pearl oysters (*Pinctada maxima*).	Drift diving.	Fishing effort is mostly focused in shallow coastal waters (10 to 15 m depth), with a maximum depth of 35 m (Lulofs *et al.* 2002).
				Fishing effort	In 2023, catch was taken from Zones 2 and 3 only with no fishing in Zone 1, which has not been fished from 2017 to 2023 (Koefoed *et al.* 2024a). In 2023, the number of wild-caught pearl oysters was 798,217 (Koefoed *et al.* 2024a). Total dive hours increased in 2023 from 10,641 hours in 2022 to 10,906 hours due to a 28% increase in harvest (Hart *et al.* 2023b). Zones 1 to 3 are all considered to be sustainable – adequate (Koefoed *et al.* 2024a).		
				Active licences/ vessels	Five active vessels in 2023 (Koefoed *et al.* 2024a).		
Pilbara Crab Managed Fishery		✓	✓	***Management area***	The Pilbara Crab Managed Fishery covers inshore waters from Onslow to Port Hedland (between longitudes 115° 5’ 60”E and 120°E), with most activity around Nickol Bay (Newman *et al.* 2024a). Areas of the fishery north and east of Exmouth and nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery (DPIRD 2018).		
					Species targeted	***Fishing methods***	***Fishing depth***
					Blue swimmer crab (*Portunus armatus)* (Johnston *et al.* 2021).	Hourglass traps (Johnston *et al.* 2021).	Up to 50 m deep (Harris *et al.* 2024).

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: Catch for the Pilbara Crab Managed Fishery was 23.8 t in 2023, 11.2 t in 2022, 9.7 t in 2021, 0.6 t in 2020 and 19.3 t in 2019 (Harris *et al.* 2024). The total catch in 2023 was a substantial increase from the 2.1 t caught in 2020, which was the lowest landed catch in 20 years (Harris *et al.* 2024). In 2023 the blue swimmer crab catch accounted for about 5% of the State commercial catch, all taken by this fishery (Harris *et al.* 2024). The blue swimmer crab stock status is considered sustainable – adequate (Harris *et al.* 2024).		
				Active licences/ vessels	No information currently available.		
Pilbara Trawl (Interim) Managed Fishery		✓		***Management area***	The Pilbara Trawl (Interim) Managed Fishery is a high-intensity fishery divided into two zones and an area governed by Schedule 5 (prohibited to trawling). In addition to the Prohibited Trawl Fishing area, no fish trawl units are allocated for use in Zone 1 or Areas 3 and 6 of Zone 2 (which comprises six management areas) (Newman *et al.* 2024; Smith, *et al.* 2025).		
				Species targeted		***Fishing methods***	***Fishing depth***
				The fishery targets more than 50 scalefish species. The main demersal scalefish species landed by the fisheries in the Pilbara region are bluespotted emperor, red emperor and rankin cod (Newman *et al.* 2021a). The key species caught by the Pilbara Trawl (Interim) Managed Fishery include crimson snapper, bluespotted emperor trevally and threadfin bream (Trinnie *et al.* 2025).	Demersal trawl. The fishery operates with standard stern trawling gear (single net with extension sweeps) (Wakefield *et al.* 2024).	The fishery operates in waters between 50 and 200 m depth (Allen *et al.* 2014; Newman *et al.* 2015).

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends were seen to be increasing over the past reporting years, until the past two seasons. The Pilbara Trawl (Interim) Managed Fishery catch was 1,907 t in 2023, 1,784 t in 2022,1,928 t in 2021, 2,087 t in 2020, 2,142 t in 2019, 1,996 t in 2018, 1,780 t in 2017, 1,529 t in 2016, 1,172 t in 2015 and 1,105 t in 2014 (Wakefield *et al.* 2024). The fishery landed 74% of total commercial catches of the demersal scale fish in the Pilbara in 2023. Increasing catch rates and fishing mortality spawning biomass estimates indicate imposed effort reductions since 2008 have resulted in increased fish abundance and stock rebuilding in the fishery (Wakefield *et al.* 2024). In 2023, the total catch of the indicator species red emperor in the Pilbara Demersal Scalefish Fishery (includes the Pilbara trawl, trap and line fisheries) was 150 t, which is within the acceptable catch range (Wakefield *et al.* 2024). The biological stocks for the Pilbara Demersal Scalefish Fishery are classified as unsustainable – inadequate (Wakefield *et al.* 2024).		
				Active licences/ vessels	Four active vessels in the trawl sector in 2023 (Wakefield *et al.* 2024).		
Pilbara Line Managed Fishery		✓	✓	***Management area***	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within 'Pilbara water', bounded by a line starting at the intersection of 21° 56'S latitude and the high water mark on the western side of the North West Cape on the mainland of WA, west along the parallel to the intersection of 21° 56'S latitude and the boundary of the AFZ, and north to longitude 120°E (Wakefield *et al.* 2024; Smith *et al.* 2025).		
				Species targeted		***Fishing method***	***Fishing depths***
				The Pilbara Line Managed Fishery catch is made up around 45 to 50 fish species. The fishery targets similar demersal species to the Pilbara Trap and Trawl fisheries, as well as some deeper offshore species such as ruby snapper and eightbar grouper (Trinnie *et al.* 2025).		Demersal long line.	Information not available.

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD: The Pilbara Line Managed Fishery caught 114 t in 2023, 104 t in 2022, 124 t in 2021, 167 t in 2020, 148 t in 2019, 93 t in 2018, 143 t in 2017, 126 t in 2016, 97 t in 2015 and 40 t in 2014 (Wakefield *et al.* 2024). The total catch of 104 t in 2023 made up 4% of the total catch by the Pilbara Demersal Scalefish Fishery and was within the acceptable catch range (Wakefield *et al.* 2024).		
				Active licences/ vessels	Six active vessels in 2023 (Wakefield *et al.* 2024).		
Pilbara Trap Managed Fishery		✓	✓	***Management area***	The Pilbara Trap Managed Fishery covers the area from Exmouth northwards and eastwards to the 120° line of longitude, and offshore as far as the 200 m isobath. Like the trawl fishery, the trap fishery is also managed using input controls in the form of individual transferable effort allocations, monitored with a satellite-based vessel management system. The fishery includes six licences allocated to three vessels, operating principally from Onslow (Wakefield *et al.* 2024; Smith *et al.* 2025).		
				Species targeted		***Fishing methods***	***Fishing depths***
				The catch is made up of around 45 to 50 fish species. The fishery generally targets long-lived, high-value demersal scalefish such as red emperor and rankin cod, but also lands significant catches of shorter-lived species such as blue spotted emperor (Trinnie *et al.* 2025).		Demersal fish traps.	About 30 m isobath to 200 m isobath (DPIRD n.d.).
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The Pilbara Trap Managed Fishery caught 573 t in 2023, 597 t in 2022, 662 t in 2021, 584 t in 2020, 680 t in 2019, 563 t in 2018, 573 t in 2017, 495 t in 2016, 510 t in 2015 and 268 t in 2014 (Wakefield *et al.* 2024). The total catch of 573 t in 2023 made up 22% of the total catch by the Pilbara Demersal Scalefish Fishery and exceeded the acceptable catch range for the total catch (Wakefield *et al.* 2024).		
				Active licences/ vessels	Three active vessels in the trap sector in 2023 (Wakefield *et al.* 2024).		

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
Shark Bay Beach Seine and Mesh Net Managed Fishery	-	-	-	***Management area***	The Shark Bay Beach Seine and Mesh Net Managed Fishery operates from Denham.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Whiting (yellowfin *Sillago schomburgkii*), sea mullet (*Mugil cephalus*), tailor (*Pomatomus saltatrix*) and western yellowfin bream (*Acanthopagrus australis*).		Beach seine and mesh net.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: Total catch was 131 t in 2023, 131 t in 2022,135 t in 2021, 171 t in 2020, 175 t in 2019 and 176 t in 2018 (Jackson and Nolan 2024). Of the total catch in 2023, 80 t consisted of whiting, 25 t of sea mullet, 13 t of western yellowfin bream, 8 t of tailor, and 0.5 t of pink snapper (Jackson and Nolan 2024). The stock status of targeted species is sustainable – adequate (Jackson and Nolan 2024).		
				Active licences/ vessels	Four vessels were active in 2022 (Jackson and Nolan 2024).		
Shark Bay Crab Managed Fishery	-	-	-	***Management area***	The Shark Bay Crab Managed Fishery operates within the NWMR. It is based primarily in Carnarvon but operates throughout the waters of Shark Bay.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Blue swimmer crab (*Portunus armatus*).		Trap and trawl.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The fishery landed 369 t in 2023, 401 t in 2022, 549 t in 2020–21, 638 t in 2019–20, 529 t in 2018–19 and 518 t in 2017–18 (Chandrapavan *et al.* 2024). The fishery closed for 18 months in 2012 and 2013 to promote stock recovery after a series of adverse environmental conditions between 2010 and 2011 (Chandrapavan *et al.* 2024). Limited commercial fishing resumed under a national quota management system between 2013 and 2017 (Chandrapavan *et al.* 2024). The current stock status is sustainable – adequate (Chandrapavan *et al.* 2024).		
				Active licences/ vessels	In the trawl sector in 2023 there were three trap vessels and 21 trawl vessels (Chandrapavan *et al.* 2023a).		

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<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">Shark Bay Prawn and Scallop Managed Fishery</td><td rowspan="5">-</td><td rowspan="5">-</td><td rowspan="5">-</td><td>Management area</td><td colspan="3">The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns. The Shark Bay Scallop Managed Fishery is usually WA’s most valuable scallop fishery (Kangas et al. 2021).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Western king prawn (Penaeus latisulcatus), brown tiger prawn (Penaeus esculentus), endeavour prawn (Metapenaeus endeavouri), coral prawn (Metapenaeopsis sp.) and saucer scallop (Amusium balloti).</td><td>Low-opening otter trawls.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years’ catch based on State of the Fisheries annual reports provided by DPIRD: The Shark Bay Prawn Managed Fishery landed 866 t in 2023, 831 t in 2022, 1,303 t in 2021, 1,268 t in 2020, 1,214 t in 2019, 1,091 t in 2018 and 1,608 t in 2017 (Koefoed et al. 2024c).
Of the total landings, 640 t comprised of western king, 226 t of brown tiger, and 1 t of blue endeavour prawns (Koefoed et al. 2024c).
The Shark Bay Scallop Managed Fishery has been managed under a quota management framework since the fishery reopened in 2015 (Wilkin et al. 2024). Scallop landings for Shark Bay were 172 t (861 t meat weight) in 2023, 35 t (177 t meat weight) in 2022, 123.6 t meat weight (618.2 t whole weight) in 2021, 177.1 t meat weight (885.5 t whole weight) in 2020 and 339 t meat weight (1,694 t whole weight) in 2019.
All stocks for target species are considered sustainable – adequate (Koefoed et al. 2024c; Wilkin et al. 2024).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">There were 12 licenced vessels in the 2023 season, a decrease from the 2022 season which had 18 licenced vessels (Koefoed et al. 2024c).
In the Shark Bay Scallop Managed Fishery there are boats licenced to take scallops (11 Class A licences) and boats that also fish for prawns (18 Class B licences). There were nine active vessels (Wilkin et al. 2024).</td></tr>
</table>

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<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">South Coast Crustacean Managed Fishery</td><td rowspan="5">-</td><td rowspan="5">-</td><td rowspan="5">-</td><td>Management area</td><td colspan="3">The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery, and the South Coast Deep-Sea Crab Fishery.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Southern rock lobster (Jasus edwardsii), western rock lobster (Panulirus cygnus), giant crab (Pseudocarcinus gigas), crystal crab (Chaceon albus) and champagne crab (Hypothalassia acerba).</td><td>Pots.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years’ catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Crustacean Managed Fishery reported a total catch of 34.8 in 2023, 23.8 t in 2022, 27.4 t in 2020–21, 52.5 t in 2019–20, 67.5 t in 2018–19 and 101.2 t in 2017–18 season.
In 2023, the total crustacean landings comprised champagne crabs (2.5 t), southern rock lobsters (13.8 t), giant crabs (5.2 t), western rock lobsters (5.5 t), and crystal crabs (7.8 t) (How et al. 2023d).
The stock status is sustainable – adequate (Truffley and Wiberg 2024a).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">The South Coast Crustacean Managed Fishery is based on mobile vessels that employ a skipper and one to three crew. In 2023, there were nine participating vessels (Truffley and Wiberg 2024a).</td></tr>
</table>

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<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">South Coast Purse Seine Managed Fishery</td><td rowspan="5">-</td><td rowspan="5">-</td><td rowspan="5">-</td><td>Management area</td><td colspan="3">The South Coast Purse Seine Managed Fishery is active in coastal waters between Cape Leeuwin and the SA border. Landings are primarily off Albany, Bremer Bay and Esperance (Norriss and Blazeski 2020). The managed fishery has five management zones: centred on King George Sound (Zone 1), Albany (Zone 2), Bremer Bay (Zone 3), Esperance (Zone 4) and a developmental zone near Cape Leeuwin (Zone 5) where catches have been negligible (Norriss and Moses 2024a).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Small pelagic finfish.
Australian sardine (pilchards, Sardinops sagax), yellowtail scad (Trachurus novaezelandiae), Australian anchovy (Engraulis australis), scaly mackerel (Sardinella lemuru) and maray (Etrumeus jacksoniensis).
Entitled to take sandy sprat (Hyperlophus vittatus) and blue sprat (Spratelloides robustus), but not reported caught since 1993–94.</td><td>Purse seine nets from vessels.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years’ catch based on State of the Fisheries annual reports provided by DPIRD: The South Coast Purse Seine Managed Fishery landed 1,622 t in 2023, 1,636 t in 2022, 1,255 t in 2020–21, 1,498 t in 2019–20, 1,064 t in 2018–19 and 2,168 t in the 2017–18 season.
The total catch in 2023, consisted of >99% of Australian sardines (Norriss and Moses 2024a). Fishing effort in 2023 was 460 boat days (Norriss and Moses 2024a).
The stock status for the Australian sardine is considered sustainable – adequate (Norriss and Moses 2024a).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Six active vessels in 2022 (Norriss and Moses 2024a).</td></tr>
</table>

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
South West Coast Salmon Managed Fishery	✓	✓	✓	***Management area***	The South West Coast Salmon Managed Fishery operates on various beaches south of the metropolitan area and includes all WA waters north of Cape Beaufort except Geographe Bay.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Western Australian salmon (*Arripis truttaceus*).		Beach seine nets.	Information not available.
				Fishing effort	No fishing occurs north of the Perth metropolitan area, despite the managed fishery boundary extending to Cape Beaufort (WA/NT border), as advised by Western Australian Fishing Industry Council. The commercial catch for the entire West Coast Nearshore and Estuarine Finfish resource was 267.5 t in 2023. The total catch of WA salmon was 28.4 t in 2023, a decrease from 82.9 t in 2022. The WA salmon stock status is considered sustainable – adequate (Yeoh *et al.* 2024).		
				Active licences/ vessels	The number of active vessels or licences in 2023 is unknown, but there were about 12 commercial fishers employed in 2018 (Yeoh *et al.* 2024).		
South-west Trawl Managed Fishery	-	-	-	***Management area***	The South-west Trawl Managed Fishery is a multi-species fishery and includes two of WA's smaller scallop fishing grounds at Fremantle and north of Geographe Bay (Fairclough and Walters 2018).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Scallops (*Ylistrum balloti,* formerly *Amusium balloti*) and associated byproducts. In years of low scallop catches, licensees may use trawl gear to target finfish species.		Trawl.	Information not available.
				Fishing effort	Catch levels are unavailable for recent years. The fishery was not active in 2015 or 2016 (Fairclough and Walters 2018). Effort in the fishery is highly variable and typically fluctuates in response to recruitment variability in saucer scallops and prawns. In 2023, the South-west Trawl Managed Fishery reported 62 t (Fisher *et al.* 2024). The stock status of scallops is considered sustainable – adequate (Wilkin *et al.* 2023a).		
				Active licences/ vessels	Five vessels fished in 2023 (Fisher *et al.* 2024).		

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<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">Specimen Shell Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The Specimen Shell Managed Fishery encompasses the entire WA coastline, but effort is concentrated in areas adjacent to population centres such as Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah, the Capes area and Albany (Bruce et al. 2024). There are several closed areas where the fishery is not permitted to operate. These include various marine parks and aquatic reserves, such as Ningaloo Marine Park. The Perth metropolitan area is also important because of its populations of two rare cowrie species (Bruce et al. 2024).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The Specimen Shell Managed Fishery targets specimen shells for display, collection, cataloguing and sale.
About 200 species of specimen shell are collected each year. Some effort focuses on mollusc families that are most popular with shell collectors, such as cowries, cones, murexes and volutes (Bruce et al. 2024).</td><td>Collection is predominantly by hand when diving or wading in shallow coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).</td><td>For collection by hand (diver-based), this typically restricts effort to safe diving depths (less than 30 m).
Remotely operated vehicle collection could enable depths up to 300 m (Bruce et al. 2024).</td></tr>
<tr><td>Fishing effort</td><td colspan="3">A total of 5,807 specimen shells were collected in 2023, distributed over 140 species (Bruce et al. 2024). A total of 5,074 specimen shells were collected in 2021, distributed over 200 species (Hart et al. 2023b). Total number of specimen shells collected in 2020 was 4,258 shells across 206 species (Hart et al. 2021).
Stocks of landed species in the Specimen Shell Managed Fishery are classified as sustainable – adequate (Bruce et al. 2024).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">An exemption for the trial of remotely operated underwater vehicles (limited to one per licence) was in place during 2023 (Bruce et al. 2024).
There was a total of 30 licences in the fishery, of which 18 licences were fished in 2023 (Bruce et al. 2024). Effort in 2023 was 452 days, which was 64 fishing days more than reported in 2022 (Bruce et al. 2024).</td></tr>
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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
The South Coast Salmon Managed Fishery	-	-	-	***Management area***	The South Coast Salmon Managed Fishery is one of two fisheries operating in the South Coast bioregion that target nearshore and estuarine finfish.		
				Species targeted		***Fishing methods***	***Fishing depth***
				WA salmon (*Arripis truttaceus*), southern school whiting (*Sillago bassensis*), Australian herring (*Arripis georgianus*), King George whiting (*Sillaginodes punctatus*), sea mullet (*Mugil cephalus*), estuary cobbler (*Cnidoglanis macrocephalus*) and black bream (*Acanthopagrus butcheri*).		Beach seines, haul nets and gill nets.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: Total catch for the South Coast Estuarine and Nearshore Scalefish and Invertebrates resource was 238.6 t in 2023, 267.6 t for 2022, 275.1 t in 2021 and 334 t in 2020. Of this, the South Coast Salmon Managed Fishery landed 6.7 t of WA salmon in 2023, 54.5 t in 2022, 48.5 t in 2021, 76 t in 2020 and 56.5 t in 2019. The stock status of target species is sustainable – adequate (Yeoh *et al.* 2024).		
				Active licences/ vessels	Catch was recorded against eight licences in 2023 (Yeoh *et al.* 2024).		
Western Australian Abalone Managed Fishery	✓	✓	✓	***Management area***	The Western Australian Abalone Managed Fishery includes all coastal waters from the WA/SA border to the WA/NT border. The fishery is concentrated on the south coast and the west coast. It is divided into eight management areas. The fishery for greenlip and brownlip abalone operates in areas 1 to 4 and the Roe's abalone fishery operates in areas 1, 2, 5, 6, 7 and 8 (Strain *et al.* 2024c).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Greenlip abalone (*Haliotis laevigata*), brownlip abalone (*Haliotis conicopora*) and Roe's abalone (*Haliotis roei*).		Divers.	Distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip/brownlip abalone (Strain *et al.* 2024c).

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total catch for greenlip and brownlip abalone in 2023 was 41.4 t whole weight (27.3 t greenlip and 14.4 t brownlip), (Strain *et al.* 2024b), a decrease from 2022 which was 54.5 t whole weight (37.2 greenlip t and 17.3 t brownlip) (Strain *et al.* 2024b). The total catch in 2021 was the lowest catch recorded for greenlip/brownlip in 53 years (Strain *et al.* 2023). The Roe's abalone resource catch for 2023 was 25.9 t, a 10.4% decrease from the previous season (Strain *et al.* 2024c). In 2022 was 28.9 t whole weight, an increase from 25.6 t whole weight in 2021 (Strain *et al.* 2024c). The stock status of greenlip abalone is considered inadequate and brownlip abalone is adequate (Strain *et al.* 2024b). The stock status of the Roe's abalone is considered adequate (Strain *et al.* 2024c).		
				Active licences/ vessels	There were 15 registered vessels in 2023 for greenlip and brownlip abalone (Strain *et al.* 2024b) and 21 for Roe's abalone, but only a small proportion was active (Strain *et al.* 2024c).		
West Coast Beach (Beach Bait Fish Net) Managed Fishery	-	-	-	***Management area***	Primarily active in the Bunbury areas in the SWMR, operates between 26° and 33°S.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Whitebait.		Beach-based haul nets.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total catch of whitebait in 2023 was 18 t, a decrease from 23.3 t in 2022 (Yeoh *et al.* 2024). The fishery continues to be environmentally limited, with stocks still recovering from the 2010–11 marine heat wave (Yeoh *et al.* 2024). The stock status is inadequate – environmentally limited (Yeoh *et al.* 2024).		
				Active licences/ vessel:	The number of active vessels in 2023 is unknown, but five licensees reported landings of whitebait in 2011 (Yeoh *et al.* 2024).		

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<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">West Coast Deep Sea Crustacean Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The fishery targets deepwater crustaceans:
crystal (snow) crab (Chaceon albus)
giant (king) crab (Pseudocarcinus gigas)
champagne (spiny) crabs (Hypothalassia acerba).
Catches are dominated by crystal crabs, of which 99% of their total allowable catch was landed in 2020 (Tuffley and Wiberg 2024b).</td><td>Baited pots, or traps, are operated in long lines that have between 80 and 180 pots attached to a main line marked by a float at each end.</td><td>Deeper than 150 m (and mostly at depths of between 500 and 800 m). Most of the commercial crystal crab catch is taken in depths of 500 to 800 m (Western Australian Fishing Industry Council). [22]</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total landings were 124.8 t in 2023, 133.5 t in 2022, 155.5 t in 2021, 156.1 t in 2020, 155.7 t in 2019 and 168 t in 2018.
The total landings of crustaceans in 2023 were dominated by crystal crabs (123.1 t). A further 1.7 t of champagne crabs and 136.5 kg of giant crab were also landed in 2023 (Tuffley and Wiberg 2024b).
The stock status for crystal crab is considered adequate. However, it is likely the stock biomass is near or below its threshold level, but above its limit level (Tuffley and Wiberg 2024b).</td></tr>
<tr><td>Active licences/ vessel</td><td colspan="3">There were seven licence holders with three vessels active in 2023 (Tuffley and Wiberg 2024b).</td></tr>
</table>

[22] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

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<tr><td rowspan="5">West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery</td><td rowspan="5">-</td><td rowspan="5">-</td><td rowspan="5">-</td><td>Management area</td><td colspan="3">The West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery is part of the Temperate Demersal Gillnet and Demersal Longline Fishery, which operates between 26° and 33°S, and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery, which operates from 33°S to the WA/SA border (Braccini and Blay 2020).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Gummy shark (Mustelus antarcticus), dusky shark (Carcharhinus obscurus), whiskery shark (Furgaleus macki) and sandbar shark (C. plumbeus). Scalefish are a byproduct.</td><td>Gillnet and longline.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Catches of elasmobranchs and fishing effort for the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery peaked during the late 1980s and early 1990s and have stabilised at lower levels in recent years (Braccini and Watt 2021).
Previous years’ values from State of the Fisheries annual reports provided by DPIRD: Estimated annual value to the fishery was $0.19 million for 2022–23, $0.23 million for 2021–22, $0.17 million for 2020–21, $0.11 million for 2019–20, $0.2 million for 2018–19 and $0.3 million for 2017–18.
Stock status for the gummy and whiskery shark is considered sustainable – adequate, with the dusky and sandbar shark status sustainable – recovering (Braccini and Rynvis 2024).</td></tr>
<tr><td>Active licences/ vessel:</td><td colspan="3">Vessel and licence data are not available. There were about five to six skippers and crew employed during 2022–23 (Braccini and Rynvis 2024).</td></tr>
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<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="6">West Coast Demersal Scalefish Interim Managed Fishery</td><td rowspan="6">-</td><td rowspan="6">-</td><td rowspan="6">-</td><td>Management area</td><td colspan="3">The West Coast Demersal Scalefish Interim Managed Fishery is the main commercial fishery that targets demersal species in the West Coast bioregion. It encompasses the waters from just south of Shark Bay down to just east of Augusta and extends seaward to the 200 nm boundary. The fishery is divided into four inshore management areas and one offshore management area.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The resource comprises over 100 species, including:
baldchin groper (Choerodon rubescens)
dhufish (Glaucosoma hebraicum)
pink snapper (Pagrus auratus).</td><td>Lines.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years’ catch based on State of the Fisheries annual reports provided by DPIRD: The West Coast Demersal Scalefish Interim Managed Fishery retained 233 t in 2023, 240 t in 2022, 259 t in 2021, 227 t in 2020, 254 t in 2019 and 230 t in 2018.
Management began to recover stocks for the West Coast Demersal Scalefish resource in 2008. Landings since 2008 have been below the stock recovery benchmark of 450 t (Fisher et al. 2024).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Twenty-eight licenced vessels operated in 2023 (Fisher et al. 2024).</td></tr>
</table>

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
West Coast Purse Seine Managed Fishery	-	-	-	***Management area***	Most of the catch in the West Coast Purse Seine Managed fishery is taken from between Cape Leeuwin and Geraldton. This region is separated into three zones: Northern Development, Perth Metropolitan, and Southern Development zones (Norriss and Moses 2024b).		
				Species targeted		***Fishing methods***	***Fishing depth***
				Small pelagic finfish such as: • scaly mackerel (*Sardinella lemuru*) • pilchards (*Sardinops sagax*) • Australian anchovy (*Engraulis australis*) • yellowtail scad (*Trachurus novaezelandiae*) • maray (*Etrumeus teres*).	Purse seine.	Information not available.
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total combined catch taken by the West Coast Purse Seine Managed Fishery and developmental licences was 214 t in 2023, 259 t in 2022, 504 t in 2021, 493 t in 2020, 527 t in 2019 and 340 t in 2018. In 2023, the total catch consisted of 66% scaley mackerel and 31% Australian sardine (Norriss and Moses 2024b). Both the scaley mackerel and Australian sardine have a stock status classified as sustainable – adequate (Norriss and Moses 2024b).		
				Active licences/ vessels	Three active vessels in 2022 (Norriss and Blazeski 2023d).		
West Coast Rock Lobster Managed Fishery			✓	***Management area***	The West Coast Rock Lobster Managed Fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North West Cape and Augusta.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Western rock lobster (*Panulirus cygnus).*		Baited pots.	Information not available.

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Fishery	Woodside activity area			Description	Fishery		
	Browse	*NWS/ Scarborough*	*North West Cape*				
				Fishing effort	Previous years' catch based on State of the Fisheries annual reports provided by DPIRD: The total catch for the West Coast Rock Lobster Managed Fishery was 4,361 t in 2023 (de Lestang and Walsh 2024). Due to COVID-19 related logistics and marketing issues, the 2020–21 season was extended from 12 to 18 months. Since the current extended season is still in progress, data has been reported on a 12-month period (15 Jan 2021 to 14 Jan 2022) (How and Wiberg 2023a). Landings for the 12-month (2021–22) season was 6,334 t and the 18-month 2020–21 season was 9,132 t. Commercial landings over the traditional 12-month season (15 Jan 2020 to 14 Jan 2021) were 5,696 t. The fishery landed 6,397 t in 2019 and 6,400 t in 2018 and 2017. The stock status for the western rock lobster is classified as sustainable – adequate (de Lestang and Walsh 2024).		
				Active licences/ vessel:	Two hundred and eighteen vessels were active in the 2023 season (de Lestang and Walsh 2024).		
Western Australia Joint Authority Northern Shark Fishery	✓			***Management area***	The Western Australia Joint Authority Northern Shark Fishery extends from longitude 12'° 45'E to the NT border.		
				Species targeted		***Fishing methods***	***Fishing depth***
				Blacktip shark (*Carcharhinus tilstoni*) and spot-tail shark (*Carcharhinus sorrah*).		Gillnets and longlines.	Information not available.
				Fishing effort	Since 2005, 60% of the waters have been closed to finishing and limited on the number of fishing days. No catch has been reported since 2008–09 (Braccini and Watt 2023; Newman *et al.* 2024a).		
				Active licences/ vessels	Information not available.		

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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside activity area</th><th rowspan="2">Description</th><th colspan="3">Fishery</th></tr>
<tr><th>Browse</th><th>NWS/ Scarborough</th><th>North West Cape</th></tr>
<tr><td rowspan="5">Western Australian Sea Cucumber Fishery (formerly Beche-de-mer Fishery)</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">Fishing occurs mostly in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions. Shark Bay was fished for the first time in 2020 (Hart et al. 2023a) and again in 2021 (Newman et al. 2022). In 2023, Shark Bay was fished for the fourth consecutive year (Strain et al. 2024a).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Two main species: sandfish (Holothuria scabra) and redfish (Actinopyga echinites).</td><td>Diving and wading. Collected by hand.</td><td>The targeted species typically inhabit nearshore in shallow depths.</td></tr>
<tr><td>Fishing effort</td><td colspan="3">Previous years’ catch based on State of the Fisheries annual reports provided by DPIRD: The Western Australian Sea Cucumber Fishery caught 126.1 t in 2023, 56.5 t in 2022, 41.3 t in 2021 3.6 t in 2020, 6.9 t in 2019, 62 t in 2018 (Gaughan and Santoro, 2020), 135 t in 2017, 93 t in 2016 and 38 t in 2015 (Strain et al. 2024a).
Sandfish were collected from the Kimberley only, which was last fished in 2017 (Hart et al. 2023a).
Deepwater redfish and black teatfish were harvested from Shark Bay (under an exception licence granted to native title holders), which was the second time this stock had been fished (Hart et al. 2023a).
The stock status of sandfish, in the Kimberly, and red fish species landed are considered sustainable – adequate, while the sandfish in the Pilbara are not sustainable – inadequate, thus a closure of the Pilbara Sandfish fishery was implemented for 2023 to 2026 (Strain et al. 2024a).</td></tr>
<tr><td>Active licences/ vessels</td><td colspan="3">Three vessels operating in 2023 (Strain et al. 2024a).</td></tr>
</table>

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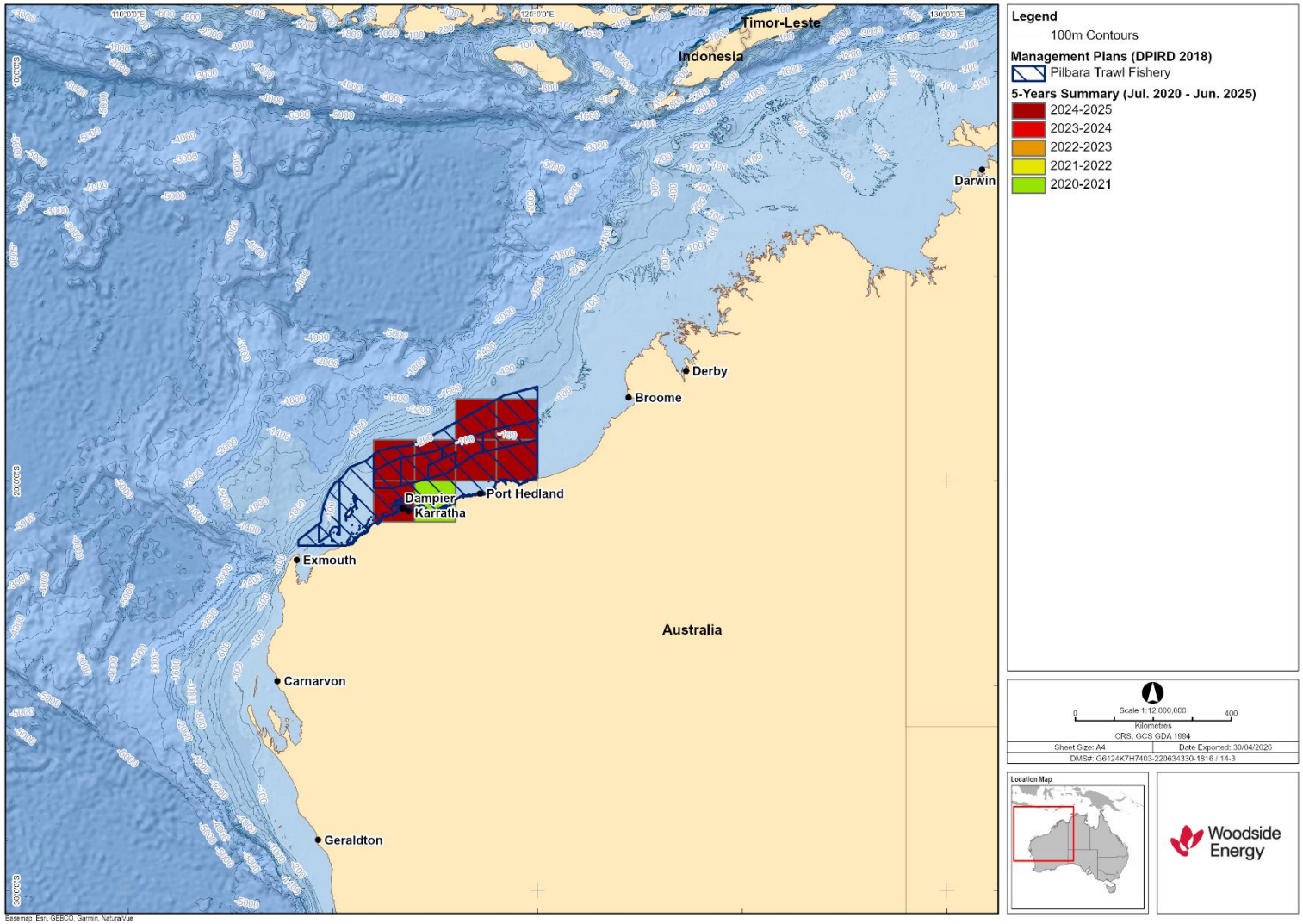


Figure 13-7: Pilbara Fish Trawl (Interim) Managed Fishery five-year average

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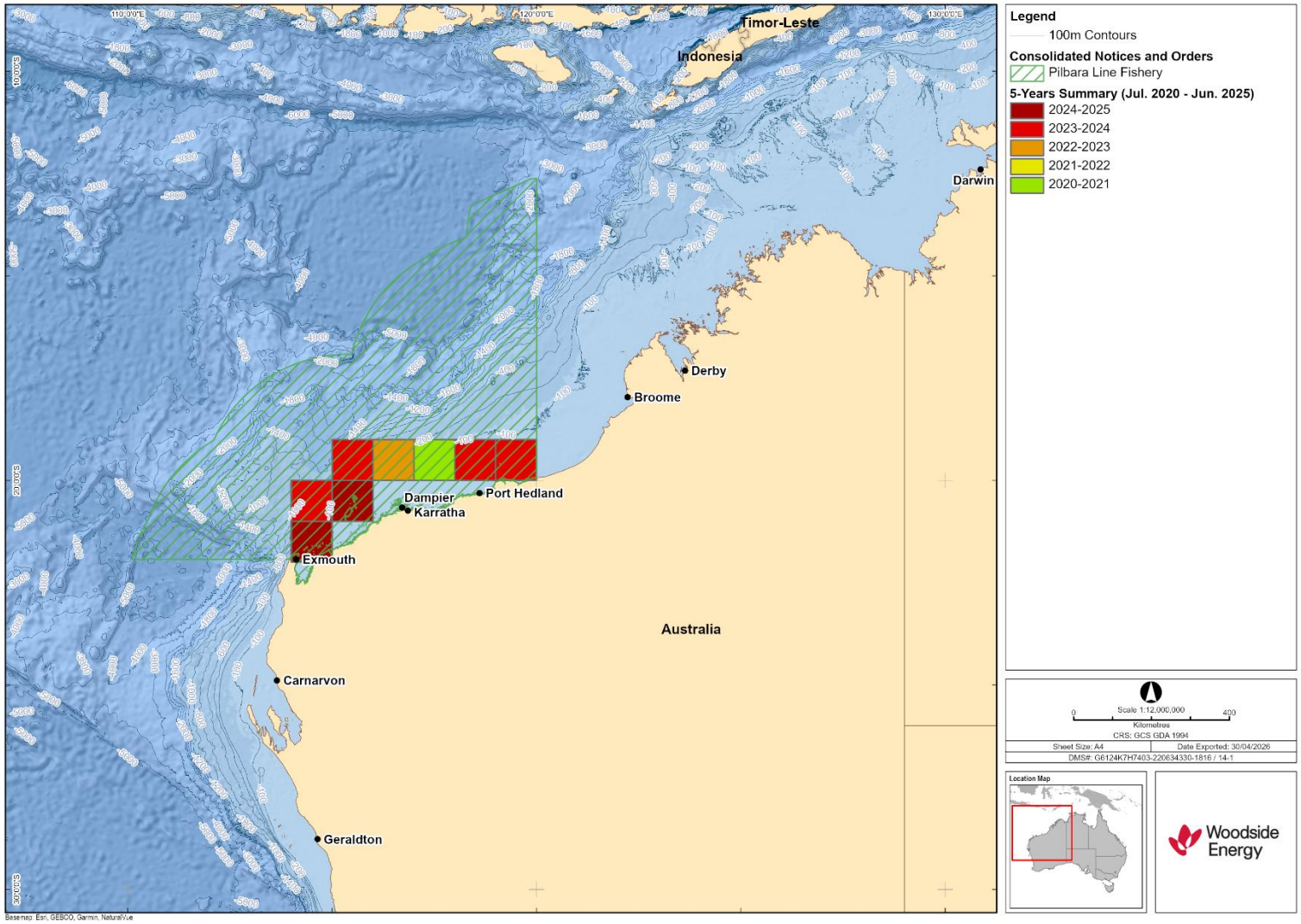


Figure 13-8: Pilbara Line Managed Fishery five-year average

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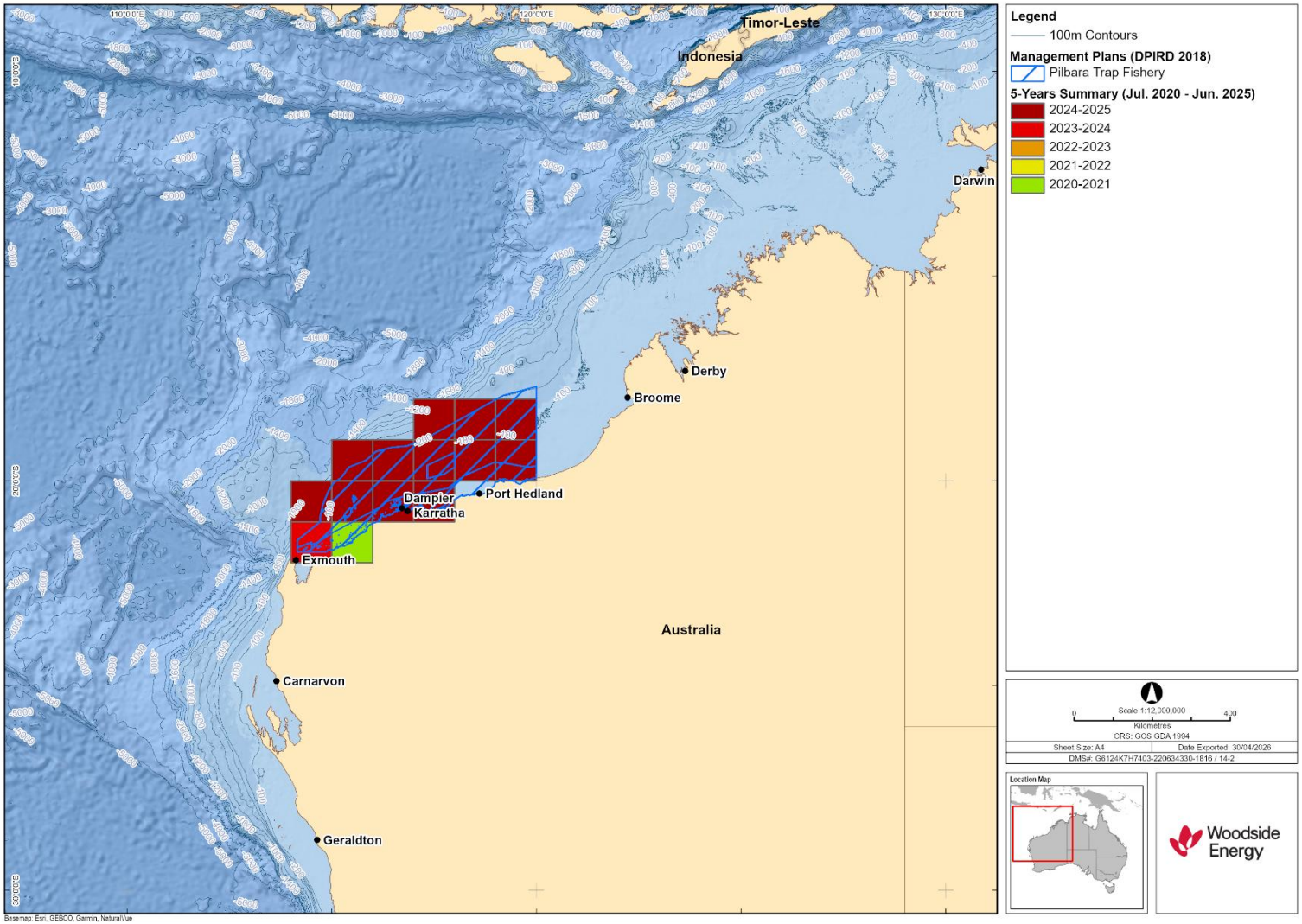


Figure 13-9: Pilbara Trap Managed Fishery five-year average

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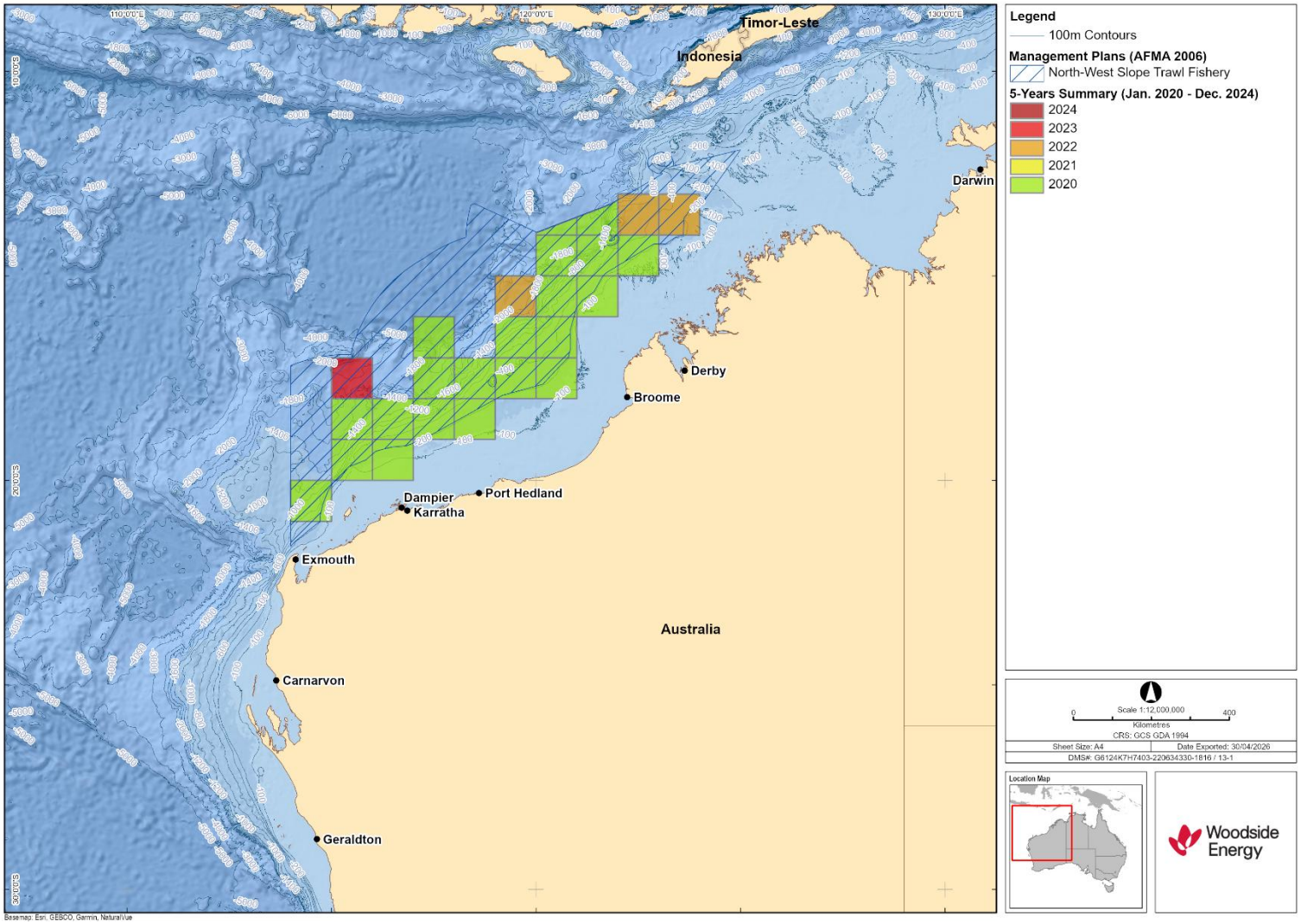


Figure 13-10: North West Slope Trawl Fishery five-year average

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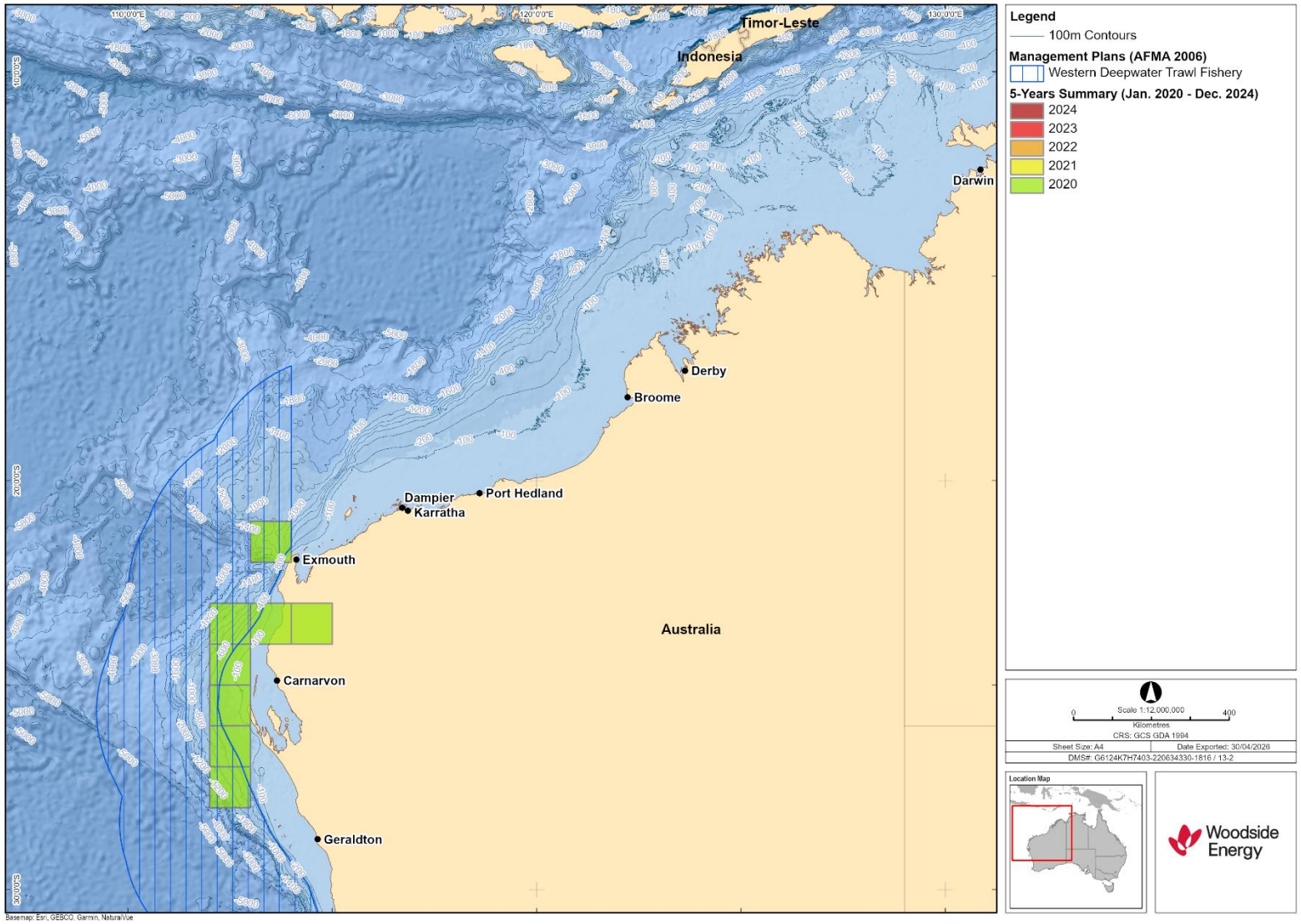


Figure 13-11: Western Deepwater Trawl Fishery five-year average

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13.2.2 Fish habitat protection areas

Fish habitat protection areas (FHPAs) are areas of special protection and management in WA waters. There are six FHPAs established in areas identified as having a particular value for protecting fish and their habitats, as well as providing areas for education or aquaculture, and which are considered to require a higher level of protection than other parts of the marine environment (DPIRD 2026a). They are set under section 115 of the *Fish Resources Management Act* (WA) for:

- the conservation and protection of fish, fish breeding areas, fish fossils or the aquatic ecosystem
- the culture and propagation of fish and experimental purposes related to that culture and propagation, or
- the management of fish and activities relating to the appreciation or observation of fish.

Under the Act, fish can include a range of organisms, including finfish, crustaceans, molluscs, corals, seagrass and algae at all stages of their life cycles. FHPAs and a marine reserve declared under the *Conservation and Land Management Act* (WA) cannot exist in the same area (DPIRD 2026a).

Management of an FHPA is designed and carried out to achieve the purposes outlined in a Plan of Management. FHPAs may restrict non-fishing-related activities, such as the use of anchors, if they are considered inconsistent with the purpose of the FHPA; for example, if there is a risk of damage to fragile marine formations such as coral reefs. Protection may also involve managing human activities, such as dredging, draining wetlands, and fishing or diving near sensitive marine habitats (DPIRD 2026a).

FHPAs within the NWMR include:

- Miaboolya Beach
- Point Quobba.

FHPAs within the SWMR include:

- Cottesloe Reef
- Houtman Abrolhos Islands
- Kalbarri Blue Holes
- Lancelin Island Lagoon.

There are no FHPAs within the NMR.

13.2.2.1 Fish habitat protection areas within the NWMR

FHPAs within the NWMR are described here.

Miaboolya Beach

Miaboolya Beach is an area of the Gascoyne River delta near Carnarvon. The FHPA covers the nearshore waters and extends north to South Bejaling and south to the northern side of the Gascoyne River mouth. It also includes the adjoining mangrove system, associated seasonal creeks and salt marshes (DPIRD 2025c).

The Miaboolya system has regional importance as a fish nursery and general fish habitat. Native fauna include juvenile finfish species such as tailor (*Pomatomus saltatrix*), mulloway (*Argyrosomus spp.*) and sand whiting (*Sillago ciliata*), and various crab species including mud crabs, blue swimmer and green mud crabs (family Portunidae). The fish and crab stocks use this environment for breeding, growth and development. Resident and migratory populations of birds, marine turtles and dolphins also exist within the area and contribute to its environmental value (DPIRD 2025c).

The Miaboolya area is of important cultural and historical value to the Gnulli native title group. The area is a place for collecting traditional food and gathering for social occasions (DPIRD 2025c).

Recreational fishing is permitted but there are restrictions in place by DPIRD (Alymore and Anderson 2003).

Point Quobba

The Point Quobba FHPA adjoins the well-known ‘Blowholes’ tourist attraction at Quobba Station, 75 km north-west of Carnarvon WA, at the northernmost point of Shark Bay (DPIRD 2004).

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The marine life and habitats of the area are of considerable scientific and recreational interest and are highly valued in the local community. However, the area is at risk from a high level of use and conflict between users, due to the area's proximity to popular tourism sites, the boat ramp, camping and settlement areas (DPIRD 2004).

The marine habitat at Point Quobba is in a transition zone between tropical and temperate climatic zones and is therefore highly diverse. It contains a mix of endemic temperate south-west Australian species and tropical and temperate Indo-Pacific species. The FHPA provides relatively sheltered breeding and feeding habitat for more than 100 species of fish (DPIRD 2025d)

Point Quobba lies within the traditional area of the Baiyungu people, who are members of the Gnulli Group. The Baiyungu people use the area regularly, sometimes to collect trochus for consumption at Point Quobba and Black Rock (DPIRD 2004).

There is a designated 'restricted area' within the FHPA to protect vulnerable habitats and fish species from human activity. Within this area commercial and recreational fishing and jet-skiing are prohibited. Restrictions on fishing in the rest of the FHPA are defined by the Department of Fisheries (DPIRD 2025d).

13.2.3 Aquaculture

Aquaculture operations in the north-west are typically restricted to inland and shallow coastal waters. The aquaculture bioregions within the NWMR include the Gascoyne Coast bioregion, the North Coast bioregion and the West Coast bioregion. These fishing bioregion boundaries are defined by DPIRD as the government body responsible for managing primary industries in WA.

Aquaculture operations within the NWMR are described below.

13.2.3.1 Gascoyne Coast bioregion

The Gascoyne Coast recreational fishing bioregion runs from the Zuytdorp Cliffs north of Kalbarri to the Ashburton River south of Onslow (DPIRD 2026c).

In the Gascoyne Coast bioregion, aquaculture activities are focused on the blacklip oyster (*Pinctada margaritifera*). Other aquaculture developments in the Gascoyne Coast bioregion include emerging producers of coral and live rock species for aquariums. There is some recent interest in the development of rock oysters in the Exmouth Gulf (Newman *et al.* 2024a).

13.2.3.2 North Coast bioregion

The North Coast recreational fishing bioregion includes the Pilbara and Kimberley regions and runs from Ashburton River south of Onslow to the WA/NT border (DPIRD 2026c).

Aquaculture activities in the North Coast bioregion are dominated by the production of pearls (from the *Pinctada maxima* oyster). Many pearl oysters for seeding are obtained from wild stocks and supplemented by hatchery-produced oysters, with major hatcheries operating at Broome and around the Dampier Peninsula (Newman *et al.* 2024a). Primary spawning of the pearl oyster occurs from mid-October to December. A smaller secondary spawning occurs in February and March (Newman *et al.* 2024a).

Finfish aquaculture in the Kimberley region is dominated by barramundi farming in the Kimberley Aquaculture Development Zone, which lies around 200 km north-east of Broome. Rock oyster trials are nearing completion near Karratha in the Pilbara region, but there is no commercial production of the species in this region at this stage (Newman *et al.* 2024a).

There is one Indigenous project at One Arm Point that operates a marine hatchery that focuses on a variety of ornamental and edible marine species (Newman *et al.* 2024a).

13.2.3.3 West Coast Bioregion

The West Coast recreational fishing bioregion runs from Black Point east of Augusta to the Zuytdorp Cliffs north of Kalbarri. This area includes the Houtman Abrolhos Islands (DPIRD 2026c).

Aquaculture activities in the West Coast bioregion, defined by DPIRD are focused on finfish, edible oysters (mainly in Cockburn Sound) and marine algae for production of beta-carotene, used as a food additive and as a nutritional supplement.

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There is also an emerging black pearl industry (from the *Pinctada margaritifera* oyster) in the Abrolhos Islands, as well as expansion in the production of Akoya pearls (small white pearls from *Pinctada fucata martensi*), *Pinctada albina* (small, yellow pearls) and *Pteria penguin*, which are often used to produce half (Mabe) pearls in pink and bluish shades.

Aquaculture licences for producing coral and live rock (pieces of old coral reefs colonised by marine life, such as beneficial bacteria, for aquariums) at the Abrolhos Islands have also been issued and other applications are being assessed (Newman *et al.* 2024a).

13.3 Fisheries – traditional

Traditional or customary fisheries are typically restricted to shallow coastal waters and areas with structures such as reef. The Western Australia Recreational Fishing Guide (DPIRD 2025b) states that Indigenous people do not need a recreational fishing licence in any waters if it is in accordance with continuing tradition and for individual or familial consumption, not for a commercial purpose.

Dugongs, fish and marine turtles that move between coastal and Commonwealth waters are important components of the Indigenous people's culture and diet. Indigenous people continue to actively manage their Sea Country in coastal waters of WA to protect and manage the marine environment, its resources and cultural values.

Indonesian fishers can fish within designated areas under the Australia–Indonesia regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (MoU Box). Traditional fishing is allowed within the MoU Box (Figure 13-12), which encompasses Ashmore Reef (Pulau Pasir), Cartier Island (Pulau Baru), Seringapatam Reef (Afringan), Scott Reef (Pulau Dato) and Browse Island (Berselan). Restrictions have since been introduced around Ashmore Reef and Cartier Island after their designation as nature reserves under the Commonwealth *National Parks and Wildlife Conservation Act* in 1983 and 2000, respectively.

The MoU allows Indonesian fishers to fish in designated areas using traditional methods only. These methods include reef gleaning, free-diving, hand lining and other non-mechanised methods. Scott Reef is currently the principal reef in the MoU Box and Indonesian fishers use it seasonally to harvest trepang, trochus shells and other reef species. The peak season is July to October due to more favourable wind conditions, and to allow fishers to sun dry their catch on their boat decks (Environmental Resources Management 2009). Browse Island is also frequently visited by shark fishers who mostly fish along the eastern margin of the MoU Box.

The Agreement between the Government of Australia and the Government of the Republic of Indonesia Relating to Cooperation in Fisheries (1992 Fisheries Cooperation Agreement) provides the framework for fisheries and marine cooperation between Australia and Indonesia. Cooperation under the Agreement today takes place under the auspices of the Working Group on Marine Affairs and Fisheries. Research reports on reef-top species in the MoU Box indicate that stocks in the area are severely depleted. In 2009 the Working Group on Marine Affairs and Fisheries agreed to a Roadmap for MoU Box Cooperative Management (DAWE 2020).

Figure 13-12 shows the operations of Indonesian traditional fishers in the MoU Box in the NWMR.

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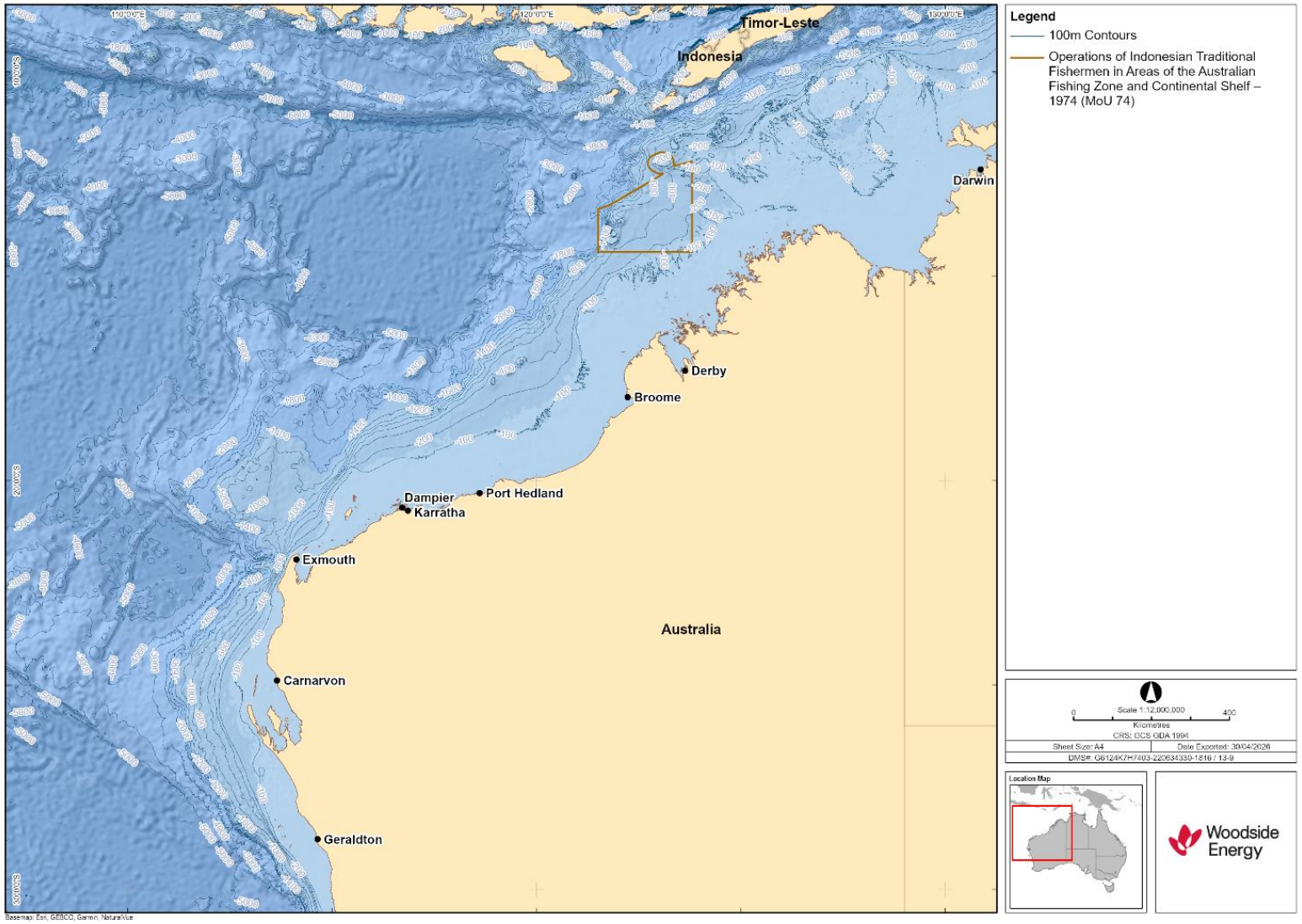


Figure 13-12: Memorandum of Understanding 74 Box – operations of Indonesian traditional fishermen in areas of the Australian Fishing Zone and Continental Shelf, 1974

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13.4 Tourism and recreation

WA's tourism sector is important to industry and the economy. In 2023–24, tourism accounted for 7.2% of WA's total jobs and generated a gross total value added of $138 billion (Tourism Western Australia 2025).

The Kimberley, Pilbara and Ningaloo-Leeuwin regions are popular destinations for Australian and international tourists. Tourism is concentrated in the vicinity of population centres. Including Broome, Dampier, Exmouth, Coral Bay and Shark Bay. Recreational and tourism activities include charter fishing, recreational fishing, diving, snorkelling, marine fauna watching and yachting (Tourism Western Australia 2024).

In 2025, visitation in the regions generated a spend of $758 million in Australia's Coral Coast and $1.4 million in the North West (Tourism Western Australia 2026).

13.4.1 Kimberley region

Tourism is one of the main industries in the Kimberley region, alongside resources, energy construction, aquaculture, agriculture and the services sector. The Kimberley Development Commission is focusing on maximising these sectors and the growing visitor economy by enhancing Aboriginal cultural experiences, adventure tourism, and eco and food tourism in the Kimberley region (Kimberley Development Commission 2025).

The Dampier Peninsula Activation Project progressed in the 2024–25 period, with upgrades to day-use facilities, communication systems and cultural heritage protection and signage, and upgrades to accommodation and resorts in the area to meet the needs of the community and tourism (Kimberley Development Commission 2025).

Recreation and tourism activities in the Kimberley region occur predominantly in WA State waters (extending offshore 3 nm from the mainland), adjacent to coastal population centres such as Broome, with a peak in activity during the winter months (dry season). These activities include recreational fishing, diving, snorkelling, wildlife watching and boating (Newman *et al.* 2023b).

Primary dive locations in the Kimberley region include the Rowley Shoals, including Mermaid Reef AMP, Scott Reef, Seringapatam Reef, Ashmore Reef AMP and Cartier Island (Newman *et al.* 2023b).

13.4.2 Pilbara region

Recreation and tourism activities within the Pilbara are of high social value. Tourism is a key economic driver for the Pilbara, with more than one million visitors to the region every year. There were over 590,000 Karijini National Park visitors recorded in the 2024–25 season (Pilbara Development Commission (PDC) 2025). Multi-year tourism infrastructure development funding has been provided for the Niminjarra Highway to provide easier access to the Karlamilyi National Park and enhance cultural tourism opportunities, and to the Whim Creek Hotel to re-establish a tourism destination between Karratha and Hedland (PDC 2024).In 2024, Mackerel Islands Pty received a grant in funding from the State Government to progress with the development of a tourism resort featuring eco-cabins, a restaurant and eco-tents on Thevenard Island. The initiative will also offer the 'Outback Ranges to Reef' tourism packages, combing visitation eco-tourism and exclusive accommodation on Thevenard and Direction islands, Onslow Beach Resort and Karijini Eco Retreat (PDC 2025).

Pilbara Dive Tours based in Karratha has grown significantly over the past 16 years, offering unique dive trips, snorkelling tours and certifications for divers in the Pilbara and Dampier Archpelago. The company also began collaborating with Flinders University in 2023 to train MAC Rangers to become dive certified, which will allow them to assist with submerged archaeological surveys on Murujuga Country (PDC 2025).

Recreational fishing within the Pilbara region tends to be concentrated in State waters adjacent to population centres. Recreational fishing is known to occur around the Dampier Archipelago, with boats launched from boat ramps around Dampier and Karratha. Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands (Williamson *et al.* 2006).

13.4.3 Ningaloo-Leeuwin region

Tourism is a major economic driver across the connected Gascoyne, Ningaloo and Shark Bay regions. Tourism has the fourth largest economic output of all the major industries of the Gascoyne region (Gascoyne Development Commission (GDC) 2023). It contributes significantly to the local economy in terms of both

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income and employment. In the 2024–25 period, the Gascoyne region had more than 267,000 overnight visitors. The total visitor spend, including daytrips in the region, equated to $385 million, with tourism accounting for 21% of employment in the region (GDC 2025).

The main attraction of the coastline for tourists is the quality of marine life. The region supports extensive scuba diving, snorkelling and fishing; specialised eco-tourism activities include whale shark and manta ray observation at Ningaloo, and dolphin and dugong viewing in Shark Bay (Newman *et al.* 2023b). In 2018–19, the Ningaloo region – Ningaloo Reef and the surrounding coastal region of Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases – contributed an estimated $110 million in value to the WA economy (DBCA 2020). Ningaloo's economic contribution to WA is attributed to four key types of economic activity: tourism expenditure by international, interstate and WA visitors to the Ningaloo region, commercial fishing in the Exmouth Gulf, recreation activity involving the reef by residents of the Ningaloo region, and management and research relating to the reef (DBCA 2020). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DBCA 2020). Dark-sky tourism flourished in 2023 with an influx of visitors coming together in Exmouth to witness a rare hybrid solar eclipse (GDC 2023). The natural phenomena brought thousands of visitors both interstate and international to the region in April 2023.

The first Cultural Tour experience was launched in 2022 on the Ningaloo Coast. Departing from Coral Bay, the Cultural Tour provides visitors the opportunity to experience a unique perspective on the coastline's rich cultural heritage and unique environment. The main marine nature-based tourist activities are concentrated around and within the Ningaloo World Heritage Area (GDC 2022). The Aboriginal AstroTourism Project was launched where Indigenous people were consulted on night-sky constellations and trained in dark-sky tourism. Through this program, star gazing experiences were successfully delivered to about 665 visitors over ten nights during the Ningaloo Eclipse (GDC 2023).

Demersal-focused recreational fishing contributes to the Gascoyne region's marine-based tourism, with about 8,500 recreational licenced fishers recorded to participate in the Gascoyne Coast demersal fishery per year (Ryan *et al.* 2025). These fishers are typically regional residents and a broad mix of age groups. Participation levels in Gascoyne fisheries have shown sensitivity to external factors, such as COVID-19 travel restrictions, which caused a marked temporary decline in 2020 before rebounding again in 2021 (Ryan *et al.* 2025).

13.5 Shipping

Commercial shipping traffic is high within the NWMR, with vessel activities including commercial fisheries, tourism such as cruises, international shipping, and oil and gas operations. There are 12 ports adjacent to the NWMR, including the major ports of Dampier, Port Hedland and Broome, which are operated by their port authorities. These ports handle large tonnages of iron ore and petroleum exports in addition to salt, manganese, feldspar, chromite and copper (DEWHA 2008a).

Heavy vessel traffic exists within the Pilbara Ports Authority management area, which recorded 3,638 vessel visits in the Port of Dampier, 3,363 vessel movements in the Port of Port Hedland, 1,214 vessel movements in the Port of Ashburton, and 265 at the Port of Varanus Island in the 2024–25 reporting period (Pilbara Ports Authority 2025). Twenty-six designated anchorages for bulk carriers, petroleum and gas tankers, drilling rigs, offshore platforms and pipelay vessels are located offshore of Rosemary Island.

In 2012, Australian Maritime Safety Authority established a network of shipping fairways off the north-west coast of Australia. The shipping fairways, while not mandatory, aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels, such as bulk carriers and liquified natural gas (LNG) ships, trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure (Australian Maritime Safety Authority 2013).

13.6 Petroleum basins

The NWMR supports multiple industries, including petroleum exploration and production.

Within the NWMR there are seven sedimentary petroleum basins: Northern and Southern Carnarvon basins, Perth, Browse, Roebuck, Offshore Canning and Bonaparte basins (Geoscience Australia 2026). Of these, the Northern Carnarvon, Browse and Bonaparte basins hold large quantities and comprise most of Australia's reserves of natural gas (DEWHA 2008a), which is reflected by the level of development in the area. In addition to existing facilities, there are proposed developments in the region. This includes proposals to develop gas and condensate from fields within the NWMR.

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In addition to the oil and gas industry, other land-based industries depend upon the marine environment in the nearshore area. These include ports, salt mines such as Karratha and Onslow, LNG onshore processing facilities such as Burrup Hub, Thevenard Island, Barrow Island, Varanus Island, and small-scale desalination plants at Barrow Island, Burrup, Cape Preston and Onslow.

Figure 13-13 shows the basins of WA and Woodside's hydrocarbon fields.

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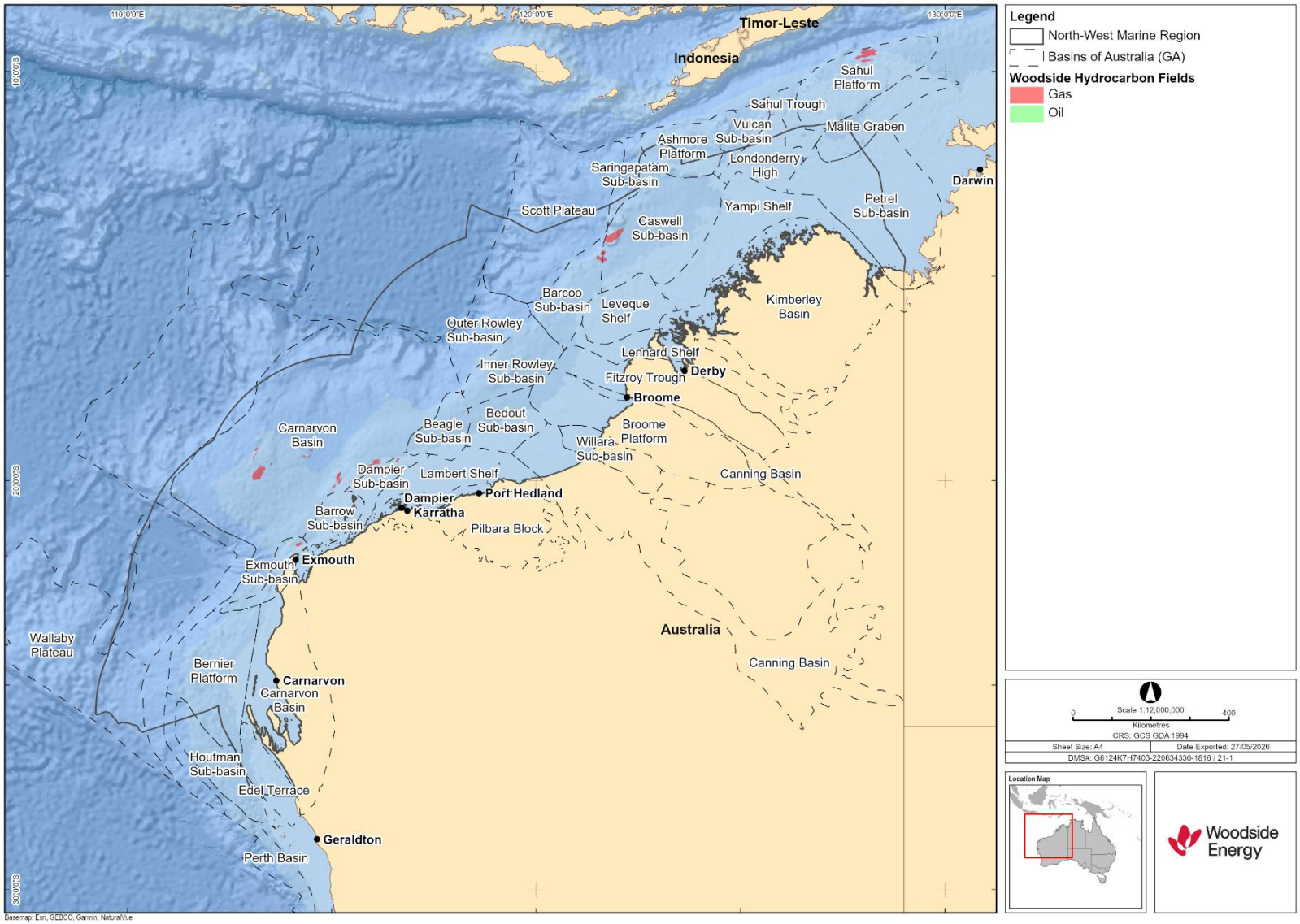


Figure 13-13: Petroleum basins within the NWMR

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13.7 Defence

Key Australian Department of Defence operational areas and facilities in the NWMR for training and operational activities include the following:

- An operating logistics base has been established in Dampier to support vessels patrolling the waters around offshore oil and gas facilities. A dedicated Navy administrative support facility is also being constructed at the nearby township of Karratha (DEWHA 2008a).
- The Taylor Barracks are the headquarters of the Pilbara regiment, one of three Regional Force Surveillance Units conducting surveillance and reconnaissance of remote areas of northern Australia. This base is in Karratha (Department of Defence n.d.).
- The Royal Australian Air Force currently maintains two 'bare bases' in remote areas of WA that are used for military exercises. One of these is the Royal Australian Air Force Base in Learmonth. The Royal Australian Air Force maintains the Commonwealth Heritage listed Learmonth Air Weapons Range Facility, which is between Ningaloo Station and the Cape Range National Park. The air training area associated with the Learmonth base extends over the offshore region.
- The Royal Australian Air Force Base Curtin is located on the north coast of WA, south-east of Derby and 170 km east of Broome. It supports land, air and sea operations aimed at supporting Australia's northern approaches.
- The Naval Communications Station Harold E. Holt is about 6 km north of Exmouth. The main role of the station is to communicate at very low frequencies (19.8 kHz) with Australian and United States submarines and ships in the eastern Indian Ocean and the western Pacific Ocean (DEWHA 2008a).
- Areas may be subject to unexploded ordnance because of military activities. These are offshore sites where ammunition and explosives have been dumped, or have been used as live bombing or firing ranges. Department of Defence maintains a record of sites confirmed as, or reasonably suspected of, being affected by unexploded ordnance. There are several suspected unexploded ordnance sites in the NWMR (Australian Government Defence n.d.).
- Three plutonium-based nuclear tests were completed at the Montebello Islands in 1952 and 1956. Sediments in the Montebello Islands Marine Park still show radionuclide levels up to 4,500 times higher than the wider WA coast, with the highest concentrations near the original blast sites. A recent study identified a radioactive site in the southern Lowendal Islands. Elevated plutonium and americium suggest potential remobilisation or transport of historic defence materials beyond known boundaries (Williams-Hoffman *et al.* 2025).

Figure 13-14 shows defence areas within the NWMR.

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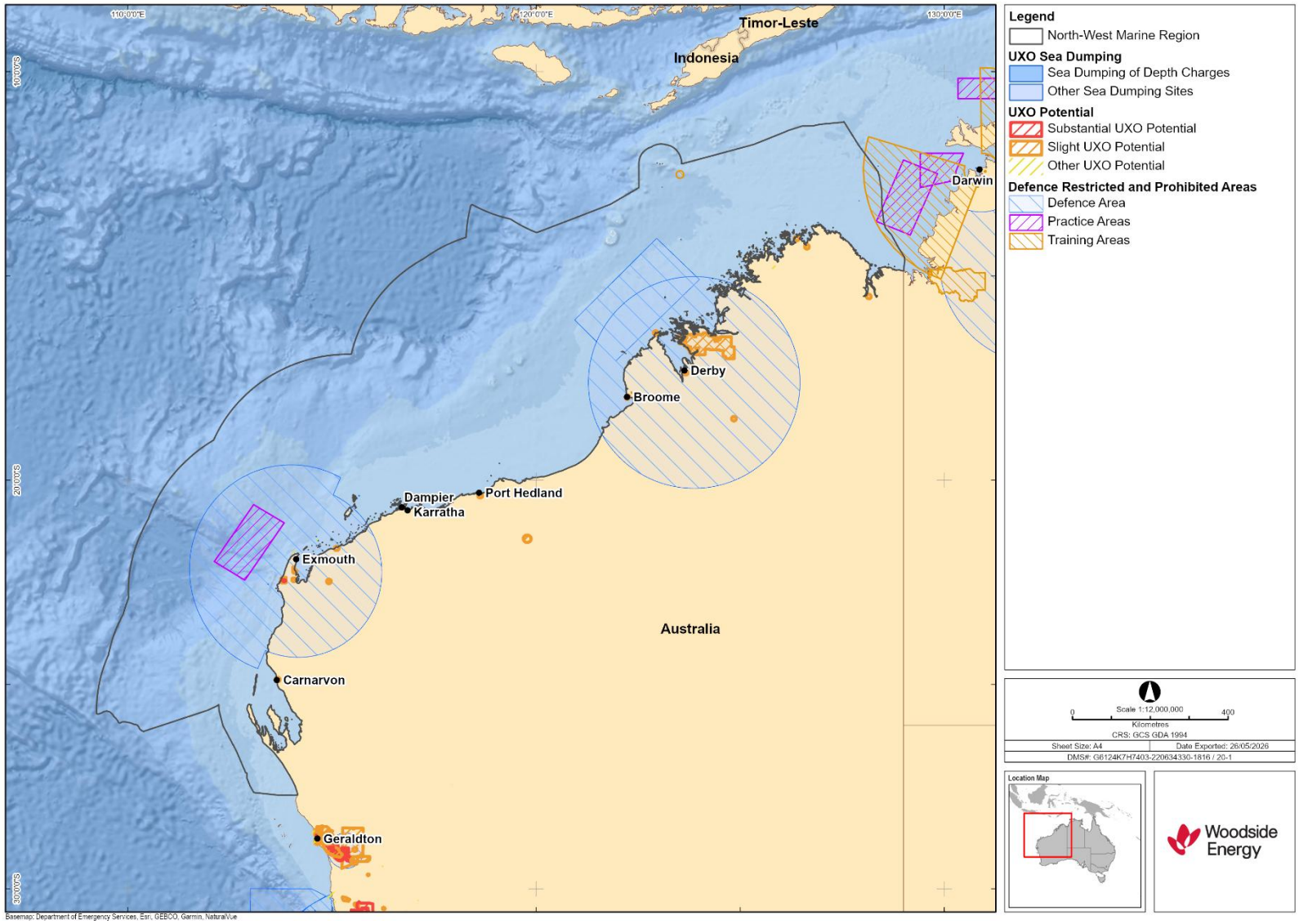


Figure 13-14: Defence areas within the NWMR

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15. LIST OF TERMS AND ACRONYMS

Table 15-1: List of terms and acronyms

Term	Definition
°C	Degrees Celsius
3D	three-dimensional
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AIMS	Australian Institute of Marine Science
AMP	Australian Marine Park
BC Act	*Biodiversity Conservation Act 2016* (WA)
BIA	biologically important area
BOM	Bureau of Meteorology
Burra Charter	Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance
CALM	Department of Conservation and Land Management
cm	centimetres
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Commonwealth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Wate
DEC	Department of Environment and Conservation
DEWHA	Department of Environment, Heritage, Water and the Arts
DEWR	Department of the Environment and Water Resources
DNP	Director of National Parks
DoE	Department of the Environment
DoEE	Department of Environment and Energy
DPAW	Department of the Parks and Wildlife
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DWER	Department of Water and Environmental Regulation
EAAF	East Asian–Australasian Flyway
EEZ	Exclusive Economic Zone
EMBA	environment that may be affected
EP	Environment Plan
EPBC	environment protection and biodiversity conservation
F-CD	flatback turtle, Cape Domett stock
F-Pil	flatback turtle, Pilbara stock
F-swKim	flatback turtle, south-west Kimberley stock
FHPA	fish habitat protection area

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Term	Definition
G-AR	green turtle, Ashmore Reef stock
G-NWS	green turtle, NWS stock
G-ScBr	green turtle, Scott Reef-Browse Island stock
GDC	Gascoyne Development Commission
H-WA	hawksbill turtle, Western Australia genetic stock
ha	hectares
HMAS	His Majesty's Australian Ship
HSK	Handelstörkreuzer
ICOMOS	International Council on Monuments and Sites
ILUA	Indigenous Land Use Agreement
IPA	Indigenous Protected Area
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
KBA	key biodiversity area
KEF	key ecological feature
kHz	kilohertz
km	kilometres
km/h	kilometres per hour
km²	cubic kilometres
KTLA	Karajarri Traditional Lands Association
L	litres
LH-WA	loggerhead turtle, Western Australia stock
LNG	liquified natural gas
m	metres
m²	square metres
m/s	metres per second
MAC	Murujuga Aboriginal Corporation
MCL	Murujuga Cultural Landscape
mm	millimetres
MNES	matters of national environmental significance
MODIS	moderate resolution imaging spectroradiometer
MoU	Memorandum of Understanding
MRAMP	Murujuga Rock Art Monitoring Program
MRAS	Murujuga Rock Art Strategy
NIAA	National Indigenous Australians Agency
nm	nautical miles
NMR	North Marine Region
NWMR	North-west Marine Region
NT	Northern Territory
NWS	North West Shelf

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Term	Definition
OPGGS (E) Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
PDC	Pilbara Development Commission
PMST	EPBC Act Protected Matters Search Tool
RNTBC	Registered Native Title Body Corporate
SA	South Australia
SPRAT	species profile and threats database
SWMR	South-west Marine Region
t	tonnes
TEC	threatened ecological community
UNESCO	United Nations Educational, Scientific and Cultural Organization
UWA	University of Western Australia
WA	Western Australia
WAMSI	Western Australian Marine Science Institution
WGAC	Wunambal Gaambera Aboriginal Corporation
Woodside	Woodside Energy Ltd. or Woodside Energy Group

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APPENDIX A PROTECTED MATTERS SEARCH REPORTS FOR THE NWMR, SWMR AND NMR

The PMST tool conducts searches on a grid-based function. Accordingly, the PMST results can indicate features or species that do not actually intersect or have a presence in the area. To validate search results, comprehensive literature and scientific expertise is used. As such, only species considered relevant to the scope of this document have been described.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

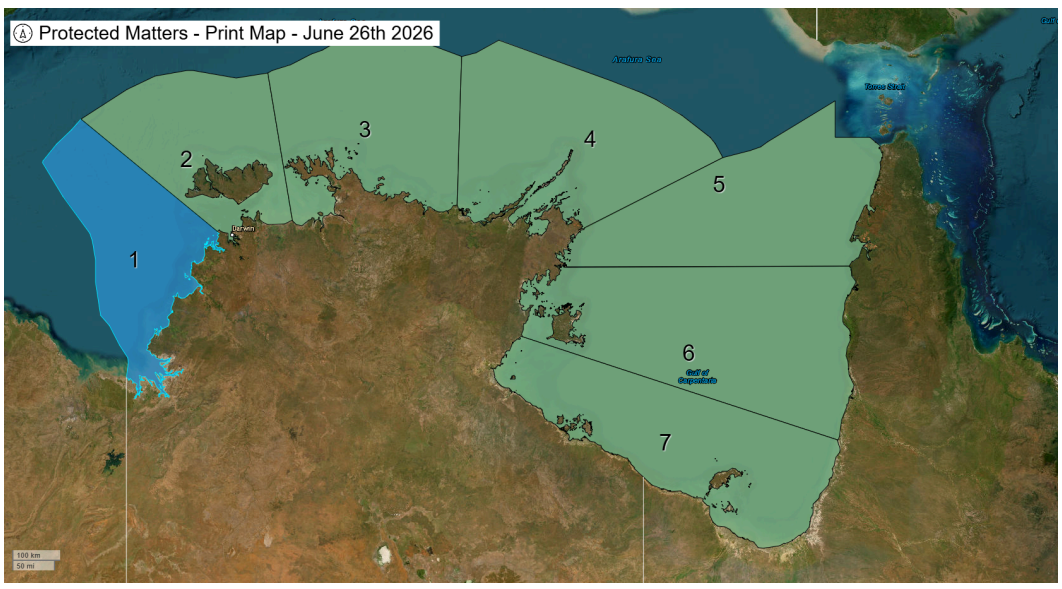


Figure 1: North Marine Region - Part 1

Report created: 26-Jun-2026

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	62
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	5
Commonwealth Heritage Places:	1
Listed Marine Species:	104
Whales and Other Cetaceans:	16
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	5
Habitat Critical to the Survival of Marine Turtles:	2

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	51
Key Ecological Features (Marine):	4
Biologically Important Areas:	7
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Species or species habitat likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris		
Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Pezoporus occidentalis](#)		
Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area
[Phaethon rubricauda westralis](#)		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
[Pluvialis squatarola](#)		
Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area
[Rostratula australis](#)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
[Sternula albifrons](#)		
Little Tern [82849]	Vulnerable	Breeding likely to occur within area
[Tringa nebularia](#)		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
[Tyto novaehollandiae kimberli](#)		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
FROG		
[Uperoleia daviesae](#)		
Howard River Toadlet, Davies's Toadlet [85375]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
[Antechinus bellus](#)		
Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera borealis](#)		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#)		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat likely to occur within area
Petrogale concinna concinna Nabarlek (Victoria River District) [87605]	Critically Endangered	Species or species habitat likely to occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Typhonium praetermissum [65859]	Endangered	Species or species habitat likely to occur within area
Typhonium sp. Cox Peninsula (S.Nicholas 15/12/1999) [93623]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat likely to occur within area
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Carettochelys insculpta Pig-nosed Turtle, Pitted Shell Turtle [1762]	Vulnerable	Species or species habitat may occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Tiliqua scincoides intermedia		
Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi		
Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli		
Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki		
Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat likely to occur within area
Glyphis glyphis		
Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Department of Climate Change, Energy, the Environment and Water	
Bradshaw Defence Area [CHL_105655]	NT
Department of Defence	
Bradshaw Field Training Area [DD_1495]	NT

Commonwealth Land Name	State
JORN Radar Site - Kalkarindji [DD_3210]	NT
JORN Radar Site - Nhulunbuy [DD_3211]	NT
NT Portion 03686 plan CP4953 [AGPR6603]	NT

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Bradshaw Defence Area	NT	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Bhanotia fasciolata		
Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus		
Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma		
Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus		
Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus		
Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus		
Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus		
Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis		
Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Emydocephalus annulatus](#) Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Hydrelaps darwiniensis](#) Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
[Hydrophis atriceps](#) Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
[Hydrophis coggeri](#) Cogger's Sea Snake, Black-headed Sea Snake [25925]		Species or species habitat may occur within area
[Hydrophis elegans](#) Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
[Hydrophis hardwickii as Lapemis hardwickii](#) Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
[Hydrophis inornatus](#) Plain Sea Snake [1107]		Species or species habitat may occur within area
[Hydrophis kingii as Disteira kingii](#) Spectacled Sea Snake [93511]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis macdowelli as Hydrophis mcdowelli		
MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major		
Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus		
Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus		
Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii		
Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii		
Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa		
Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea		
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Parahydrophis mertoni		
Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Oceanic Shoals	Habitat Protection Zone (IUCN IV)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
North Kimberley	Marine Park	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Boskalis Cambridge Gulf Marine Sand Sourcing Project	2025/10106		Referral Decision
Construction of dam wall	2004/1365		Post-Approval
Darwin Pipeline Duplication (DPD) Project	2022/09372		Post-Approval
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Controlled action			
275 km gas pipeline from Wadeye to existing Darwin gas pipeline	2006/2930	Controlled Action	Post-Approval
Blacktip Project - Wharf Construction	2007/3293	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Port Patterson Barramundi Sea Cage Farm	2005/2149	Controlled Action	Completed
Project Sea Dragon stage 1 prawn aquaculture project, NT	2015/7527	Controlled Action	Post-Approval
Trans-territory Gas Pipeline	2003/1186	Controlled Action	Completed
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Aquaculture farm	2002/737	Not Controlled Action	Completed
Construction and operation of Radar Infrastructure	2004/1406	Not Controlled Action	Completed
Core Breeding and Broodstock Maturation Centre development, Point Ceylon, NT	2016/7713	Not Controlled Action	Completed
Cox Peninsular Remediation Project, NT	2015/7587	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2008/4133	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2009/5104	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2009/4681	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D Seismic Survey (NT/P68)	2006/2980	Not Controlled Action (Particular Manner)	Post-Approval
Blacktip Gas Project Yelcherr Beach Wharf Construction	2007/3537	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Basin Seabed Mapping Survey	2009/4951	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Joseph Bonaparte Gulf Seabed mapping survey	2010/5517	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular Manner)	Post-Approval
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
NT/P77 3D Marine Seismic Survey	2009/4683	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
Removal of Potential Unexploded Ordnance within NAXA	2012/6503	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Sunshine Infill 2D and Mimosa 2D Marine Seismic Surveys	2009/4699	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
3D Seismic Survey (NT/P68)	2006/2949	Referral Decision	Completed
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Carbonate bank and terrace system of the Sahul Shelf	North-west
Carbonate bank and terrace system of the Van Diemen Rise	North
Pinnacles of the Bonaparte Basin	North-west
Pinnacles of the Bonaparte Basin	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Sousa sahulensis Australian Humpback Dolphin [87942]	Reproduction	Likely to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Reproduction	Likely to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

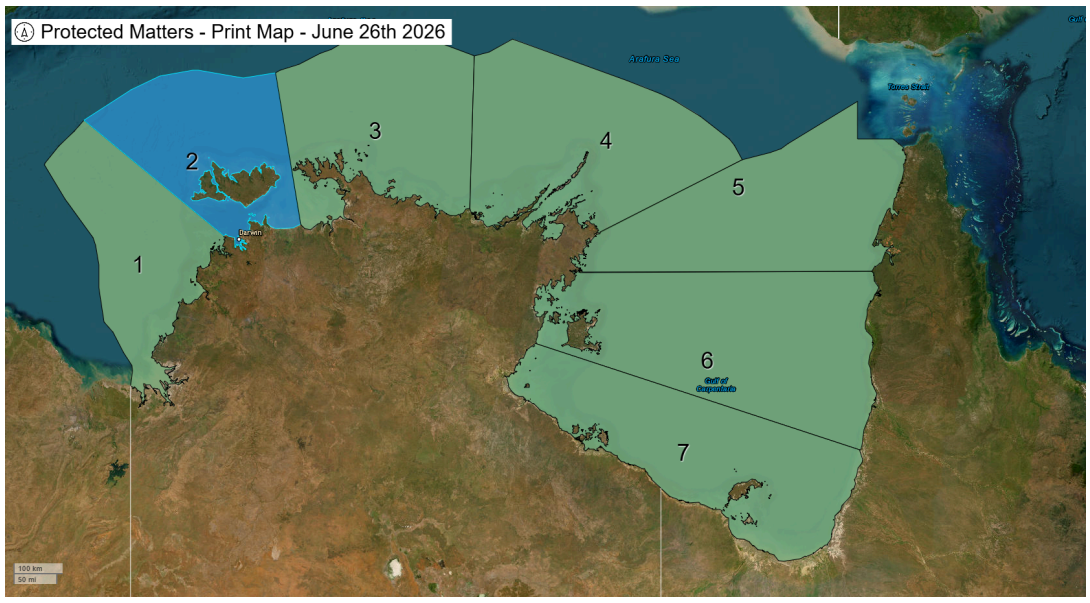


Figure 1: North Marine Region - Part 2

Report created: 26-Jun-2026

Summary
Details
Matters of NES
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Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	73
Listed Migratory Species:	79

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	30
Commonwealth Heritage Places:	7
Listed Marine Species:	119
Whales and Other Cetaceans:	26
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	4
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	5
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	75
Key Ecological Features (Marine):	3
Biologically Important Areas:	7
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Cobourg peninsula	Within 10km of Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species	[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris		
Great Knot [862]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat likely to occur within area
Epthianura crocea tunneyi Alligator Rivers Yellow Chat, Yellow Chat (Alligator Rivers) [67089]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Melanodryas cucullata melvillensis Tiwi Islands Hooded Robin, Hooded Robin (Tiwi Islands) [67092]	Critically Endangered	Species or species habitat likely to occur within area
Mirafra javanica melvillensis Horsfield's Bushlark (Tiwi Islands) [81011]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Pluvialis squatarola		
Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Tyto novaehollandiae melvillensis		
Tiwi Masked Owl, Tiwi Islands Masked Owl [26049]	Endangered	Species or species habitat likely to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
FROG		
Uperoleia daviesae		
Howard River Toadlet, Davies's Toadlet [85375]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		
Antechinus bellus		
Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Mesembriomys gouldii melvillensis Black-footed Tree-rat (Melville Island) [87619]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat likely to occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sminthopsis butleri Butler's Dunnart [302]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Burmannia championii listed as Burmannia sp. Bathurst Island (R.Fensham 1021) [93461]	Endangered (listed as Burmannia sp. Bathurst Island	Species or species habitat likely to occur within area
Elaeocarpus miegei [65147]	Endangered	Species or species habitat likely to occur within area
Hoya australis subsp. oramicola a vine [55436]	Vulnerable	Species or species habitat likely to occur within area
Mitrella tiwiensis a vine [82029]	Vulnerable	Species or species habitat likely to occur within area
Stylidium ensatum a triggerplant [86366]	Endangered	Species or species habitat likely to occur within area
Tarennoidea wallichii [65173]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Typhonium jonesii a herb [62412]	Endangered	Species or species habitat likely to occur within area
Typhonium mirabile a herb [79227]	Endangered	Species or species habitat likely to occur within area
Typhonium praetermissum [65859]	Endangered	Species or species habitat likely to occur within area
Typhonium sp. Cox Peninsula (S.Nicholas 15/12/1999) [93623]	Endangered	Species or species habitat likely to occur within area
Xylopia monosperma a shrub [82030]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat likely to occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		

Scientific Name	Threatened Category	Presence Text
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat likely to occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat likely to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius dubius Little Ringed Plover [896]		Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting likely to occur within area
Tringa incana Wandering Tattler [831]		Roosting likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Australian Broadcasting Corporation	
Lot 05808 Town of Darwin plan(s) LTO91/047 [AGPR919]	NT
Australian Communications and Media Authority (ACMA)	
Section 00032 Hundred of Bray plan OP 001510 [AGPR4619]	NT
Section 00033 Hundred of Bray plan A 000715 [AGPR947]	NT
Australian Postal Corporation	
Volume 196 Folio 136 [AGPR7373]	NT
Volume 703 Folio 129 [AGPR7046]	NT
Volume 738 Folio 234 [AGPR7032]	NT
Department of Climate Change, Energy, the Environment and Water	

Commonwealth Land Name	State
Larrakeyah Barracks Headquarters Building [CHL_105192]	NT
Larrakeyah Barracks Precinct [CHL_105251]	NT
Larrakeyah Barracks Sergeants Mess [CHL_105193]	NT
RAAF Base Commanding Officers Residence [CHL_105430]	NT
RAAF Base Precinct [CHL_105252]	NT
RAAF Base Tropical Housing Type 2 [CHL_105194]	NT
RAAF Base Tropical Housing Type 3 [CHL_105195]	NT
Department of Defence	
AAC 76 Army Cadet Unit - Tiwi Islands [DD_3053]	NT
DMFS Tybell Street - Winnellie [DD_3059]	NT
Larrakeyah Defence Precinct [DD_0836]	NT
Larrakeyah Defence Precinct [AGPR6484]	NT
Larrakeyah Defence Precinct [AGPR45]	NT
Lot 05231 Town of Darwin plan S 78/019 [AGPR5900]	NT
Patrol Boat SPO Office - Darwin [DD_3214]	NT
Portion 01609 Hundred of Bagot plan A 000525 [AGPR6569]	NT
Portion 02260 Hundred of Bagot plan S 79/149B [AGPR928]	NT
Portion 02270 Hundred of Bagot plan S 80/045 [AGPR4999]	NT
RAAF Bathurst Island Radar Site [DD_3085]	NT
RAAF Darwin [DD_1302]	NT
Section 05730 Hundred of Bagot plan L2004/063 [AGPR6570]	NT
Shoal Bay Receiving Station [DD_0107]	NT
Stokes Hill Oil Fuel Installation [DD_0108]	NT
Department of Home Affairs	
Unit 132 Lot 06379 Town of Darwin plan UP 94/062 [AGPR6152]	NT
Department of Infrastructure, Transport, Regional Development, Communications and the Arts	
Darwin Airport [AGPR5930]	NT

Commonwealth Heritage Places [Resource Information]

Name	State	Status

Name	State	Status
Historic		
Larrakeyah Barracks Headquarters Building	NT	Listed place
Larrakeyah Barracks Precinct	NT	Listed place
Larrakeyah Barracks Sergeants Mess	NT	Listed place
RAAF Base Commanding Officers Residence	NT	Listed place
RAAF Base Precinct	NT	Listed place
RAAF Base Tropical Housing Type 2	NT	Listed place
RAAF Base Tropical Housing Type 3	NT	Listed place

Listed Marine Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius dubius		
Little Ringed Plover [896]		Roosting likely to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus		
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius ruficapillus		
Red-capped Plover [881]		Roosting likely to occur within area overfly marine area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area overfly marine area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura		
Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum		
Oriental Pratincole [840]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat likely to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting likely to occur within area overfly marine area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Tringa brevipes as Heteroscelus brevipes](#) Grey-tailed Tattler [851]		Roosting likely to occur within area
[Tringa glareola](#) Wood Sandpiper [829]		Roosting likely to occur within area overfly marine area
[Tringa incana as Heteroscelus incanus](#) Wandering Tattler [831]		Roosting likely to occur within area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
[Bhanotia fasciolata](#) Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys amplexus](#) Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Reptile		
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake, Black-headed Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat likely to occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Peponocephala electra](#) Melon-headed Whale [47]		Species or species habitat may occur within area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area
[Pseudorca crassidens](#) False Killer Whale [48]		Species or species habitat likely to occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
[Stenella attenuata](#) Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
[Stenella coeruleoalba](#) Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
[Stenella longirostris](#) Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
[Steno bredanensis](#) Rough-toothed Dolphin [30]		Species or species habitat may occur within area
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str.		
Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris		
Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Oceanic Shoals	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Oceanic Shoals	National Park Zone (IUCN II)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Dermochelys coriacea		
Leatherback Turtle [1768]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Casuarina	Coastal Reserve	NT
Charles Darwin	National Park	NT
Djukbinj	National Park	NT
Garig Gunak Barlu	Marine Park	NT
Mary River	National Park	NT

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Bayview, The Boulevarde, Darwin, NT	2015/7466		Completed
Berrimah Freight Terminal Expansion Project	2024/09847		Assessment
Clarence Strait Offshore Tidal Energy Project	2008/4660		Assessment
Darwin Pipeline Duplication (DPD) Project	2022/09372		Post-Approval
Darwin Pipeline Duplication DPD Project	2022/9166		Completed
Darwin Ship Lift Project	2021/9068		Post-Approval
East Arm Marine Industry Park, Darwin, NT	2014/7318		Completed
Establishment and operation of a refinery at Darwin, NT	2015/7604		Assessment
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Port Melville marine supply base, Melville Island	2015/7510		Completed
Proposed City of Weddell	2011/6090		Completed
Replacement of the East Point Outfall	2011/6099		Completed
Tiwi H2 Project	2022/09347		Assessment

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Andranangoo Creek & Lethbridge Bay mineral sand mining	2005/2155	Controlled Action	Completed
Augmentation of the East Point Effluent Rising Main and Extension of East Point Outfall	2009/5113	Controlled Action	Post-Approval
Barramundi Nursery Farm	2005/2378	Controlled Action	Completed
Condensate Processing Facility, East Arm	2006/2734	Controlled Action	Proposed Decision
Darwin to Moomba Gas Pipeline	2001/213	Controlled Action	Completed
East Arm Wharf Expansion Works	2010/5304	Controlled Action	Post-Approval
Glyde Point and Middle Arm Peninsula Infrastructure Support	2001/334	Controlled Action	Completed
Glyde Point Industrial Estate	2001/336	Controlled Action	Completed
Glyde Point Industrial Estate and Associated Infrastructure	2004/1506	Controlled Action	Completed
Hardwood Plantation	2001/229	Controlled Action	Post-Approval
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Kilimiraka Mineral Sands and Associated Infrastructure (Bathurst Island), NT	2012/6587	Controlled Action	Assessment Approach
Lee Point Master-planned urban development, Darwin, NT	2015/7591	Controlled Action	Post-Approval
Methanol Plant	2001/195	Controlled Action	Completed
Middle Arm Peninsula Industrial Area Development	2001/339	Controlled Action	Completed
Mt Peake iron, vanadium and titanium mining project & assoc infrastructure, 280kms NNW Alice Springs	2013/7027	Controlled Action	Post-Approval
Muirhead Subdivision	2010/5525	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Operation of 17 Tiger Helicopters at Robertson Barracks	2004/1459	Controlled Action	Post-Approval
Residential subdivision of Lot 9793 (formerly Lots 9774 and 9779) Lee Point Road	2005/2108	Controlled Action	Post-Approval
Shipping Channel Enhancement	2010/5431	Controlled Action	Completed
Snake Bay Barramundi Sea Cage Farm	2005/2150	Controlled Action	Completed
Talisman Saber 2005 Military Exercise	2004/1819	Controlled Action	Post-Approval
Tassie Shoal Gas Reforming and Methanol Production Plants - NT/P48	2000/108	Controlled Action	Post-Approval
Tassie Shoal LNG Project	2003/1067	Controlled Action	Post-Approval
Tropical Tidal Testing Centre, Clarence Strait, 50km NE Darwin	2014/7299	Controlled Action	Guidelines Issued
Not controlled action			
Andranangoo Mine Site Aircraft Landing Area	2007/3743	Not Controlled Action	Completed
Barossa-1 (NT/P69), Caldita-2 (NT/P61) exploration wells	2006/2793	Not Controlled Action	Completed
Caldita-1 Hydrocarbon Exploration Well, NT/P61	2004/1854	Not Controlled Action	Completed
Channel Island Bridge Pipeline Replacement Project	2020/8672	Not Controlled Action	Completed
Construction and operation of Radar Infrastructure	2004/1406	Not Controlled Action	Completed
Cox Peninsular Remediation Project, NT	2015/7587	Not Controlled Action	Completed
Crowley Government Services Inc Bulk Fuel Storage Facility	2021/9015	Not Controlled Action	Completed
Darwin Port Maintenance Dredging, Darwin Harbour, NT	2017/8122	Not Controlled Action	Completed
Darwin ship lift facility and marine industries project, Darwin Harbour NT	2018/8195	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
NT/P68 2007 Two Well Drilling Program	2007/3569	Not Controlled Action	Completed
Project Sea Dragon Stage 1 Hatchery - Gunn Point, NT	2017/8092	Not Controlled Action	Completed
Residential Complex - Lots 6575 and 6576	2001/163	Not Controlled Action	Completed
Waterfront Redevelopment	2003/1256	Not Controlled Action	Completed
Wickham Point Interconnect Gas Pipeline	2008/4309	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey	2006/2729	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2006/2980	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2008/4121	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 3D & 2D Seismic Survey, in NT/P82, Timor Sea	2012/6398	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Basin Barossa Appraisal Drilling Campaign, NT	2012/6481	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
Bonaparte Basin Seabed Mapping Survey	2009/4951	Not Controlled Action (Particular Manner)	Post-Approval
Caldita 3D Marine Seismic Survey - NT/P61, NT/P69, and acreage release area NT06-5	2006/3142	Not Controlled Action (Particular Manner)	Post-Approval
Dredging the outer shipping channels of Darwin Harbour	2013/6988	Not Controlled Action (Particular Manner)	Post-Approval
Eni Bathurst 3D Seismic Survey	2011/6118	Not Controlled Action (Particular Manner)	Post-Approval
Joseph Bonaparte Gulf Seabed mapping survey	2010/5517	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Panda NT/P76 3D Seismic Acquisition Survey Program	2009/4992	Not Controlled Action (Particular Manner)	Post-Approval
Sunshine Infill 2D and Mimosa 2D Marine Seismic Surveys	2009/4699	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
3D Seismic Survey (NT/P68)	2006/2949	Referral Decision	Completed
Phillips Petroleum Wickham Point LNG facility	2001/391	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Carbonate bank and terrace system of the Van Diemen Rise	North
Pinnacles of the Bonaparte Basin	North
Shelf break and slope of the Arafura Shelf	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Reproduction	Known to occur
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Reproduction	Likely to occur
Tursiops aduncus		
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Reproduction	Known to occur
Marine Turtles		
Chelonia mydas		
Green Turtle [1765]	Reproduction	Likely to occur
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Reproduction	Likely to occur
Natator depressus		
Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Thalasseus bergii		
Crested Tern [83000]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2026

[Summary](#)

[Details](#)

- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

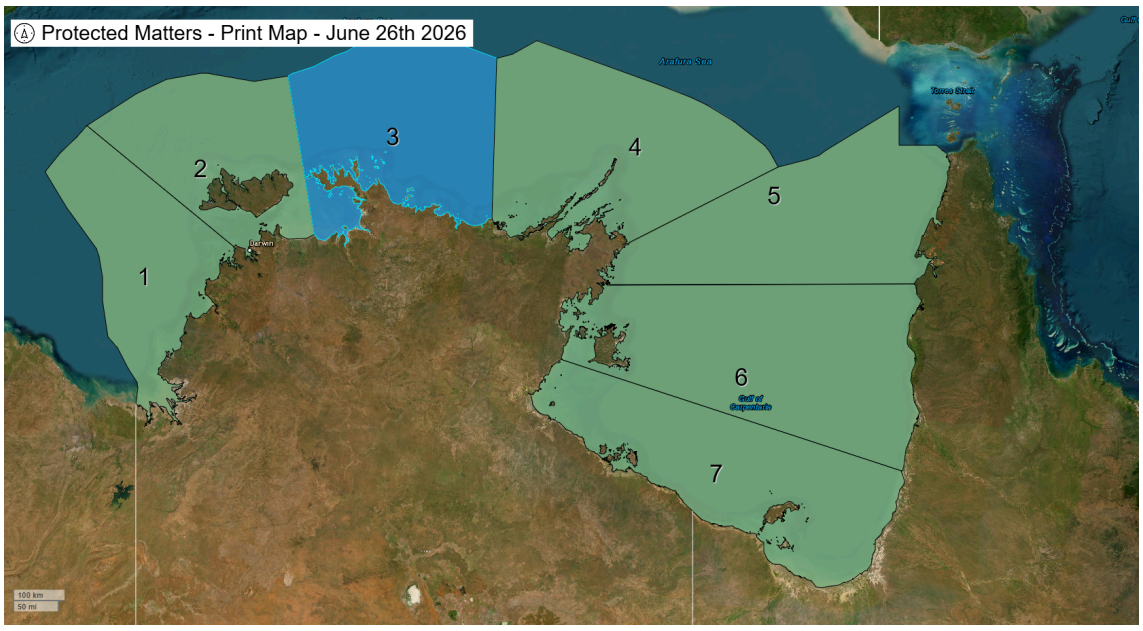


Figure 1: North Marine Region - Part 3

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	58
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	103
Whales and Other Cetaceans:	26
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	1
Australian Marine Parks:	5
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	10
Key Ecological Features (Marine):	1
Biologically Important Areas:	12
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
Kakadu National Park	NT	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Natural		
Kakadu National Park	NT	Listed place

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Cobourg peninsula	Within Ramsar site
Kakadu national park	Within Ramsar site

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat likely to occur within area
Epthianura crocea tunneyi Alligator Rivers Yellow Chat, Yellow Chat (Alligator Rivers) [67089]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		
Antechinus bellus Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat likely to occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Carettochelys insculpta Pig-nosed Turtle, Pitted Shell Turtle [1762]	Vulnerable	Species or species habitat may occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Cryptoblepharus gurrmul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Lucasium occultum Yellow-snouted Gecko, Yellow-snouted Ground Gecko [82993]	Endangered	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Nyctophilopython oenpelliensis		
Nawaran, Oenpelli Python, Oenpelli Rock Python [92941]	Vulnerable	Species or species habitat may occur within area
Tiliqua scincoides intermedia		
Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi		
Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli		
Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki		
Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat likely to occur within area
Glyphis glyphis		
Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text
null		
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Species or species habitat may occur within area
[Sterna dougallii](#) Roseate Tern [817]		Breeding likely to occur within area
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Marine Species		
[Anoxypristis cuspidata](#) Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat may occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat likely to occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Australian Maritime Safety Authority	
NT Portion 02380 plan(s) S 80/179B [AGPR37]	NT

Commonwealth Land Name	State
NT Portion 02381 plan(s) S 80/179B [AGPR38]	NT
Department of Climate Change, Energy, the Environment and Water	
Kakadu National Park (Commonwealth) [CAPAD_CWTH_06]	NT
Services Australia	
Lot 00693 Townsite of Maningrida S 891113 [AGPR6612]	NT

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius phaeopus Whimbrel [849]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Fish		
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
Reptile		
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake, Black-headed Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Commonwealth Reserves Terrestrial [Resource Information]

Name	State	Type
Kakadu	NT	National Park (Commonwealth)

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Arafura	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Arafura	Special Purpose Zone (IUCN VI)
Arnhem	Special Purpose Zone (IUCN VI)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Dermochelys coriacea Leatherback Turtle [1768]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		

Scientific Name	Behaviour	Presence
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Garig Gunak Barlu	National Park	NT
Garig Gunak Barlu	Marine Park	NT
Mary River	National Park	NT

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Geo-scientific survey	2005/2004	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
NT/P74 & NT/P75 - 2D marine seismic survey	2008/4316	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
Installation of Telecommunication Facilities	2001/254	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Tributary Canyons of the Arafura Depression	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Reproduction	Known to occur
Sousa sahulensis Australian Humpback Dolphin [87942]	Reproduction	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Reproduction	Known to occur
Marine Turtles		
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Dermochelys coriacea Leatherback Turtle [1768]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Lepidochelys olivacea Olive Ridley Turtle [1767]	Reproduction	Likely to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Onychoprion anaethetus Bridled Tern [82845]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Thalasseus bergii Crested Tern [83000]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2026

[Summary](#)
[Details](#)
- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgements](#)

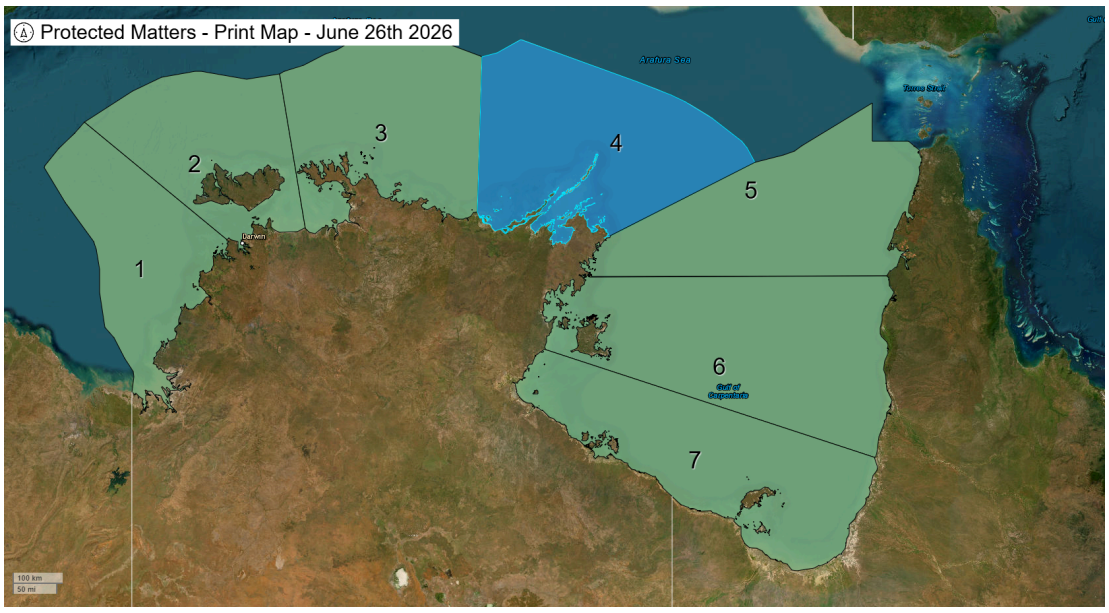


Figure 1: North Marine Region - Part 4

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	52
Listed Migratory Species:	61

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	22
Commonwealth Heritage Places:	None
Listed Marine Species:	92
Whales and Other Cetaceans:	26
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	3
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	17
Key Ecological Features (Marine):	2
Biologically Important Areas:	9
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Indigenous		
Wurrwurrwuy	NT	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris		
Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chloebia gouldiae listed as Erythrura gouldiae		
Gouldian Finch [90091]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus		
Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falcunculus frontatus whitei		
Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii smithii		
Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus		
Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica baueri		
Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area
Limosa limosa		
Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		
Antechinus bellus		
Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Conilurus penicillatus		
Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Translocated population known to occur within area
Isoodon auratus auratus		
Golden Bandicoot (mainland) [66665]	Vulnerable	Translocated population known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii		
Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Notomys aquilo		
Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Petrogale concinna canescens		
Nabarlek (Top End) [87606]	Endangered	Species or species habitat likely to occur within area
Phascogale pirata		
Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus		
Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Erythroxylum sp. Cholmondely Creek (J.R.Clarkson 9367) (Northern Territory Population)		
[91740]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei		
Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat may occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Breeding likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
[Onychoprion anaethetus](#) Bridled Tern [82845]		Breeding likely to occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sterna dougallii		
Roseate Tern [817]		Breeding likely to occur within area
Sterna sumatrana		
Black-naped Tern [800]		Breeding likely to occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus		
Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area
[Pristis clavata](#) Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
[Pristis pristis](#) Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
[Pristis zijsron](#) Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis as Sousa chinensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
[Cecropis daurica](#) Red-rumped Swallow [80610]		Species or species habitat may occur within area
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa		
Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat likely to occur within area
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Department of Defence	
NHULUNBUY JORN SITE [DD_0486]	NT
Nhulunbuy Training Depot [DD_1520]	NT
Department of Finance	
N.T. Portion 01045 plan(s) A 000776 [AGPR6610]	NT
N.T. Portion 01045 plan(s) A 000776 [AGPR007680]	NT
National Indigenous Australians Agency	
Lot 00983 Plan S72/248H [AGPR180]	NT
Lot 01240 Plan S80/140A [AGPR5951]	NT
Lot 1238 Plan S80/140A [AGPR5950]	NT

Commonwealth Land Name	State
Lot 1239 Plan S80/140A [AGPR5952]	NT
Lot 1361 S88/264 [AGPR923]	NT
Lot 1362 Plan S88/264 [AGPR922]	NT
Lot 1378 Plan S89/335 [AGPR6141]	NT
Lot 1382 Plan S89/335 [AGPR6140]	NT
Lot 1444 Plan S94/186 [AGPR6500]	NT
Lot 1490 Plan S89/335 [AGPR6488]	NT
Lot 1521 Plan S99/24 [AGPR5960]	NT
Lot 627 Plan S89/335 [AGPR6609]	NT
Lot 667 Plan S73/023 [AGPR6022]	NT
Lot 914 Plan S89/335 [AGPR300]	NT
Unit A and B Lot 1404 Plan 92/216 [AGPR5893]	NT
Unit A and B Lot 607 Plan S89/335 [AGPR6487]	NT
Services Australia	
Lot 01030 S 74/048A [AGPR6532]	NT
Lot 01325 S 83/152 [AGPR6608]	NT

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat may occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limnodromus semipalmatus		
Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sterna sumatrana Black-naped Tern [800]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Sternula albifrons as Sterna albifrons](#) Little Tern [82849]	Vulnerable	Breeding likely to occur within area
[Thalasseus bergii as Sterna bergii](#) Greater Crested Tern [83000]		Breeding likely to occur within area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys amplexus](#) Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
[Corythoichthys flavofasciatus](#) Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
[Corythoichthys haematopterus](#) Reef-top Pipefish [66201]		Species or species habitat may occur within area
[Corythoichthys schultzi](#) Schultz's Pipefish [66205]		Species or species habitat may occur within area
[Doryrhamphus dactyliophorus](#) Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Reptile		
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Wessel	Habitat Protection Zone (IUCN IV)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)
Wessel	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Dermochelys coriacea Leatherback Turtle [1768]	Nesting	Known to occur
May - Jul		

Scientific Name	Behaviour	Presence
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Completed
Controlled action			
Katherine to Gove Gas Pipeline Project	2012/6605	Controlled Action	Post-Approval
PNG-Qld Gas Pipeline - Gove Lateral	2006/2615	Controlled Action	Completed
Trans-territory Gas Pipeline	2003/1186	Controlled Action	Completed
Not controlled action			
Borrow area development, Gove operations, Rio Tinto Aluminium, Nhulunbuy NT	2017/8114	Not Controlled Action	Completed
External Borrow Pit for Pond 6 South	2011/5970	Not Controlled Action	Completed
Geo-scientific survey	2005/2004	Not Controlled Action	Completed
Gove Alumina Refinery Expansion	2003/1068	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
External Borrow Pit for Stage 2 Construction of Additional Waste Storage Pond 8, NT	2011/5849	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
NT/P74 & NT/P75 - 2D marine seismic survey	2008/4316	Not Controlled Action (Particular Manner)	Post-Approval
temporary boat disposal	2005/2281	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
Addtional , Standalone Containment Pond	2012/6347	Referral Decision	Completed

Key Ecological Features

[Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Gulf of Carpentaria basin	North
Tributary Canyons of the Arafura Depression	North

Biologically Important Areas

[Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas		
Green Turtle [1765]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Reproduction	Likely to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Anous stolidus Common Noddy [825]	Reproduction	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Thalasseus bergii Crested Tern [83000]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2026

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

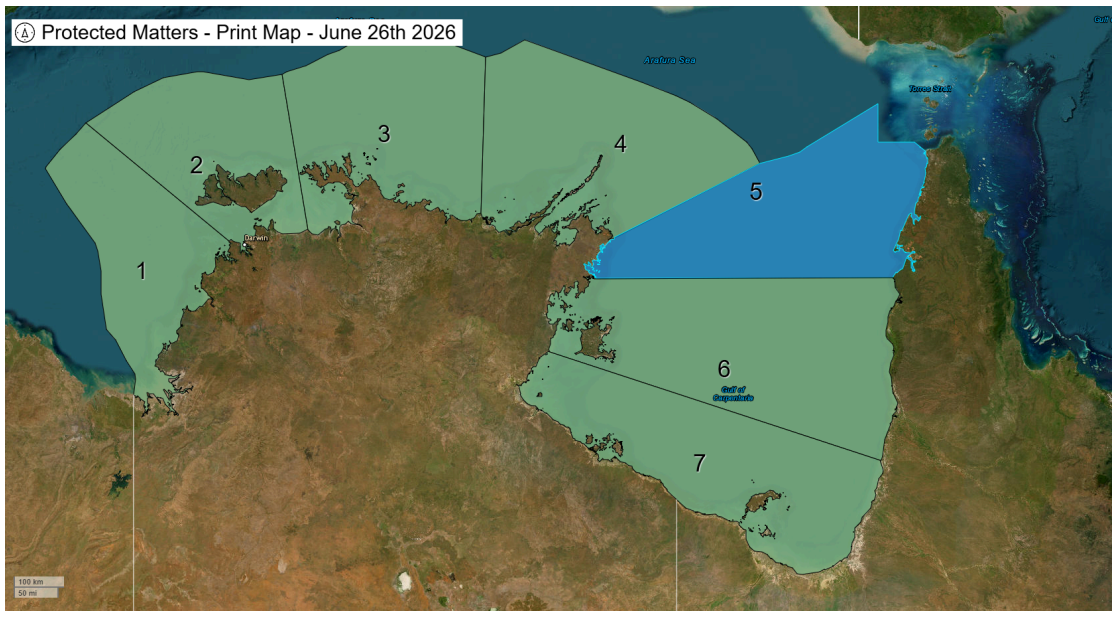


Figure 1: North Marine Region - Part 5

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	61
Listed Migratory Species:	59

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	7
Commonwealth Heritage Places:	None
Listed Marine Species:	115
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	5
Habitat Critical to the Survival of Marine Turtles:	5

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
Key Ecological Features (Marine):	2
Biologically Important Areas:	11
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Probosciger aterrimus macgillivrayi Palm Cockatoo (Australian) [67033]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Hipposideros semoni Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Vulnerable	Species or species habitat may occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area
Mesembriomys gouldii rattoides Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat [87620]	Vulnerable	Species or species habitat likely to occur within area
Notomys aquilo Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat may occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat may occur within area
Rhinolophus robertsi Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat, Lesser Large-eared Horseshoe Bat [87639]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Bruguiera x hainesii Haines's Orange Mangrove [91351]	Critically Endangered	Species or species habitat may occur within area
Calophyllum bicolor [11371]	Vulnerable	Species or species habitat likely to occur within area
Dendrobium bigibbum Cooktown Orchid [10306]	Vulnerable	Species or species habitat likely to occur within area
Dendrobium carronii listed as Cepobaculum carronii an orchid [10822]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dendrobium johannis		
Chocolate Tea Tree Orchid [13585]	Vulnerable	Species or species habitat likely to occur within area
Erythroxylum sp. Cholmondely Creek (J.R.Clarkson 9367) (Northern Territory Population)		
[91740]	Vulnerable	Species or species habitat may occur within area
Solanum dunalianum		
[13819]	Vulnerable	Species or species habitat likely to occur within area
Vappodes phalaenopsis		
Cooktown Orchid [78894]	Vulnerable	Species or species habitat may occur within area
Xylopia monosperma		
a shrub [82030]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei		
Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Egernia rugosa		
Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Lepidochelys olivacea		
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Breeding likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Mobula alfredi as Manta alfredi		
Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris		
Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Bureau of Meteorology	
Lot 1 on MPH35644 [AGPR2812]	QLD
Department of Defence	
Weipa Training Depot - Kerr Point Drive [DD_3131]	QLD
Department of Home Affairs	
Lot 42 on MP37500 [AGPR2804]	QLD
Lot 44 on MP37500 [AGPR2806]	QLD
Lot 50 on MP37500 [AGPR2807]	QLD
Lot 51 on MP37500 [AGPR2805]	QLD
Services Australia	
Lot 217 on MPH41093 [AGPR2813]	QLD

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Breeding likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat may occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat likely to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus maxweberi Maxweber's Pipefish [66209]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus macrorhynchus Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Microphis brachyurus Short-tail Pipefish, Short-tailed River Pipefish [66257]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Solenostomus cyanopterus](#) Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
Reptile		
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis melanosoma Black-banded Robust Sea Snake [1109]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis vorisi Estuarine Sea Snake [25927]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Laticauda colubrina Yellow-lipped Sea Krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Microcephalophis gracilis as Hydrophis gracilis		
Graceful Small-headed Sea Snake, Slender Sea Snake [87375]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Parahydrophis mertoni		
Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus		
Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Wessel	Habitat Protection Zone (IUCN IV)
West Cape York	Habitat Protection Zone (IUCN IV)
West Cape York	National Park Zone (IUCN II)
West Cape York	National Park Zone (IUCN II)
West Cape York	Special Purpose Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Dec - Jan		
Dermochelys coriacea Leatherback Turtle [1768]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Pine River Bay	Fish Habitat Area (A)	QLD
Pine River Bay	Fish Habitat Area (B)	QLD

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Completed
Aurukun Bauxite Project	2020/8624		Assessment
Controlled action			
Bauxite Hill Mining and Barging Project	2015/7538	Controlled Action	Post-Approval
Bauxite Hills Mine and Port Project	2012/6246	Controlled Action	Completed
Hey Point bauxite mining project, approx 10kms south Weipa, Qld	2014/7382	Controlled Action	Post-Approval
Pisolite Hills bauxite mine and associated infrast	2008/4046	Controlled Action	Completed
PNG-Qld Gas Pipeline - Gove Lateral	2006/2615	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Skardon River Bauxite Mining Project, Weipa, QLD	2014/7305	Controlled Action	Post-Approval
South of the Embley Bauxite Mine Extension, including Construction of Port and Infrastructure	2008/4435	Controlled Action	Completed
South of the Embley Bauxite Mining Project	2010/5642	Controlled Action	Post-Approval
Urquhart Bauxite Project, North Qld	2016/7706	Controlled Action	Post-Approval
Urquhart Point mineral sands project	2010/5707	Controlled Action	Post-Approval
Not controlled action			
Dredging of Weipa South Channel	2003/1311	Not Controlled Action	Completed
Extension of Lorim Point Wharf	2004/1749	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D Seismic Survey, Permit Area Q23P	2009/4925	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Two dimensional (2d) seismic survey in Gulf of Carpentaria	2013/6991	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Capital Dredging Weipa South Channel	2003/1302	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Sousa sahulensis Australian Humpback Dolphin [87942]	Foraging	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Reproduction	Known to occur
Marine Turtles		
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Reproduction	Likely to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Anous stolidus Common Noddy [825]	Reproduction	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Foraging	Likely to occur
Onychoprion anaethetus Bridled Tern [82845]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jun-2026

[Summary](#)
[Details](#)
- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

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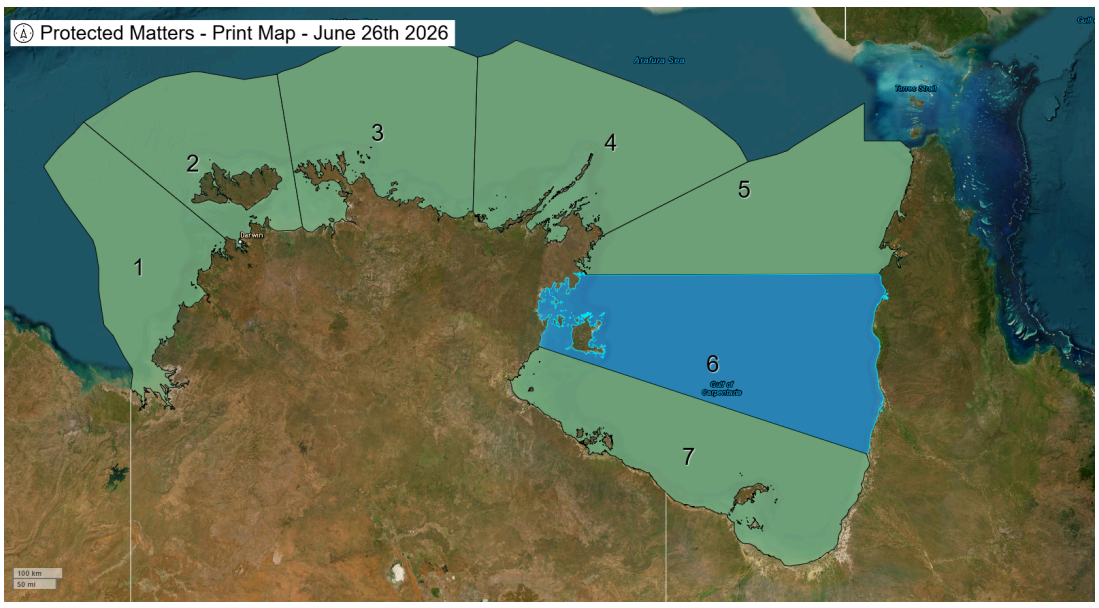


Figure 1: North Marine Region - Part 6

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	61
Listed Migratory Species:	72

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	119
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	2
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	13
Key Ecological Features (Marine):	3
Biologically Important Areas:	10
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Probosciger aterrimus macgillivrayi Palm Cockatoo (Australian) [67033]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
MAMMAL		
Antechinus bellus Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii rattoides Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat [87620]	Vulnerable	Species or species habitat may occur within area
Notomys aquilo Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat likely to occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat may occur within area
Rhinolophus robertsi Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat, Lesser Large-eared Horseshoe Bat [87639]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		

Scientific Name	Threatened Category	Presence Text
[Dendrobium bigibbum](#) Cooktown Orchid [10306]	Vulnerable	Species or species habitat likely to occur within area
[Dendrobium johannis](#) Chocolate Tea Tree Orchid [13585]	Vulnerable	Species or species habitat likely to occur within area
[Vappodes phalaenopsis](#) Cooktown Orchid [78894]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Acanthophis hawkei](#) Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Egernia rugosa](#) Yakka Skink [1420]	Vulnerable	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Lepidochelys olivacea](#) Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
[Tiliqua scincoides intermedia](#) Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Varanus mertensi		
Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli		
Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat may occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis glyphis		
Speartooth Shark [82453]	Critically Endangered	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Acrocephalus orientalis](#) Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
[Calidris alba](#) Sanderling [875]		Roosting likely to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
[Calidris falcinellus as Limicola falcinellus](#) Broad-billed Sandpiper [91731]		Roosting likely to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Department of Defence	
Aurukun Training Depot [DD_3134]	QLD
Groote Eylandt Training Depot [DD_0833]	NT
JORN Radar Site - Groote Eylandt [DD_3212]	NT
Pormpuraaw Training Depot [DD_3133]	QLD

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat may occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat likely to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat likely to occur within area overfly marine area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus maxweberi Maxweber's Pipefish [66209]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		

Scientific Name	Threatened Category	Presence Text
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
Reptile		
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Hydrelaps darwiniensis](#) Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
[Hydrophis atriceps](#) Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis caerulescens Dwarf Sea Snake [1103]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Gulf of Carpentaria	National Park Zone (IUCN II)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
May - Jul		
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Nassau River	Fish Habitat Area (A)	QLD
Rutland Plains	Nature Refuge	QLD

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Completed
Aurukun Bauxite Project	2020/8624		Assessment
Southern Lease Mining Project	2023/09457		Assessment
Winchelsea Island Manganese Mine Project, NT	2021/8877		Assessment
Controlled action			
Eastern Leases Project, Groote Eylandt, Northern Territory	2014/7228	Controlled Action	Post-Approval
South of the Embley Bauxite Mine Extension, including Construction of Port and Infrastructure	2008/4435	Controlled Action	Completed
South of the Embley Bauxite Mining Project	2010/5642	Controlled Action	Post-Approval
Not controlled action			
Eastern Leases 2010 Exploration Drilling Program	2010/5455	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Pormpuraaw Community Sewerage Facility	2002/690	Not Controlled Action	Completed
Not controlled action (particular manner)			
Acoustic and Resistivity Sub-Bottom Profiling Survey	2011/6116	Not Controlled Action (Particular Manner)	Post-Approval
Eastern Leases 2013 Exploration Drilling Program, Groote Eylandt, NT	2013/6848	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Groote Eylandt Offshore Marine Surveys	2010/5643	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Submerged coral reefs of the Gulf of Carpentaria	North

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Reproduction	Likely to occur

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Fregata ariel Lesser Frigatebird [1012]	Foraging	Likely to occur
Fregata ariel Lesser Frigatebird [1012]	Reproduction	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Thalasseus bergii Crested Tern [83000]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

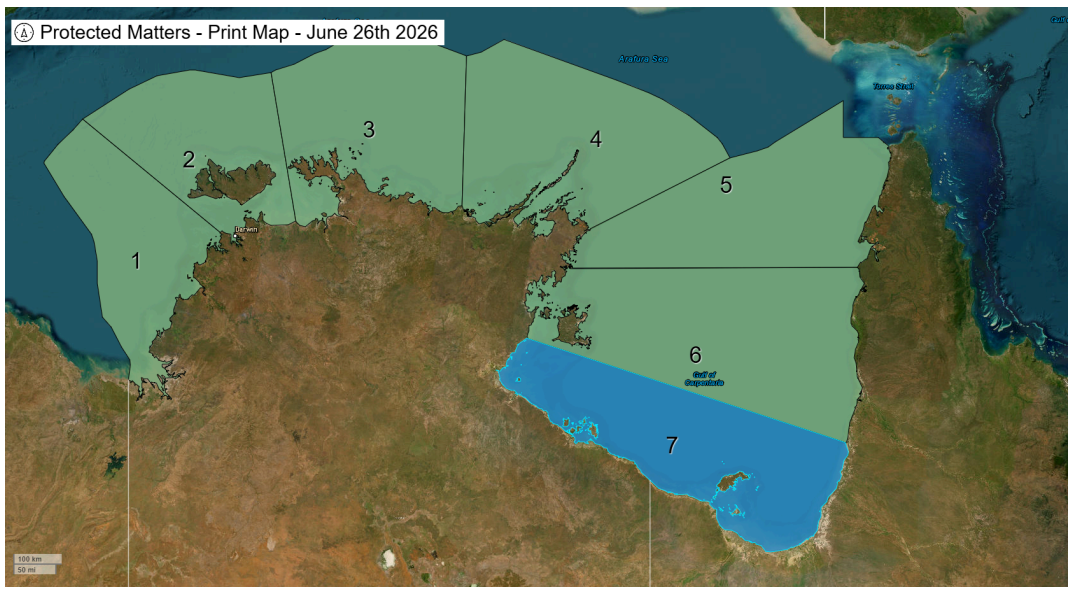


Figure 1: North Marine Region - Part 7

Report created: 26-Jun-2026

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Details
Matters of NES
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Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	53
Listed Migratory Species:	75

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	113
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	4
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	9
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	9
Key Ecological Features (Marine):	4
Biologically Important Areas:	11
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
MAMMAL		
Antechinus bellus Fawn Antechinus [344]	Vulnerable	Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phascogale pirata		
Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus		
Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Vappodes phalaenopsis		
Cooktown Orchid [78894]	Vulnerable	Species or species habitat may occur within area
REPTILE		
Acanthophis hawkei		
Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Elseya lavarackorum		
Gulf Snapping Turtle [67197]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat may occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sterna sumatrana Black-naped Tern [800]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat likely to occur within area
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands	[Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Department of Defence	
Mornington Island Training Depot [DD_3143]	QLD

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat likely to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting likely to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting likely to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sterna sumatrana Black-naped Tern [800]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting likely to occur within area overfly marine area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys amplexus](#) Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
[Corythoichthys flavofasciatus](#) Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
[Doryrhamphus excisus](#) Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
[Doryrhamphus janssi](#) Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
[Festucalex cinctus](#) Girdled Pipefish [66214]		Species or species habitat may occur within area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Micrognathus micronotopterus](#) Tidepool Pipefish [66255]		Species or species habitat may occur within area
[Solegnathus hardwickii](#) Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
Reptile		
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Crocodylus johnstoni](#) Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis caerulescens Dwarf Sea Snake [1103]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Parahydrophis mertoni Arafura Smooth Sea Snake, Northern Mangrove Sea Snake [1090]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Limmen	Habitat Protection Zone (IUCN IV)
Gulf of Carpentaria	National Park Zone (IUCN II)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Barranyi (North Island)	National Park	NT
Eight Mile Creek	Fish Habitat Area (A)	QLD
Finucane Island	National Park	QLD
Limmen	National Park	NT
Limmen Bight	Marine Park	NT
Morning Inlet - Bynoe River	Fish Habitat Area (A)	QLD

Protected Area Name	Reserve Type	State
Nassau River	Fish Habitat Area (A)	QLD
Rutland Plains	Nature Refuge	QLD
Staaten-Gilbert	Fish Habitat Area (A)	QLD

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Arnhem Space Centre Operations (Down Range Recovery)	2023/09657		Completed
Blue Carbon Ecosystem Restoration - Research Pilot Project Northern Territory Portion 4319 - Kangaroo Island	2023/09565		Completed
Roper Valley Iron Ore Project, NT	2017/7929		Completed
Controlled action			
Roper Bar Iron Ore Mine and Transport Infrastructure	2012/6242	Controlled Action	Post-Approval
Roper Bar Iron Ore Mine and Transport Infrastructure	2011/6079	Controlled Action	Completed
Not controlled action			
Eastern Leases 2010 Exploration Drilling Program	2010/5455	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Sewerage Network and Sewerage Treatment Plant	2009/4775	Not Controlled Action	Completed
Referral decision			
Groote Eylandt Offshore Marine Surveys	2010/5643	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North

Name	Region
Plateaux and saddle north-west of the Wellesley Islands	North
Submerged coral reefs of the Gulf of Carpentaria	North

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Reproduction	Likely to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Fregata ariel Lesser Frigatebird [1012]	Reproduction	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Sula leucogaster Brown Booby [1022]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Thalasseus bergii Crested Tern [83000]	Reproduction	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 25-Jun-2026

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements

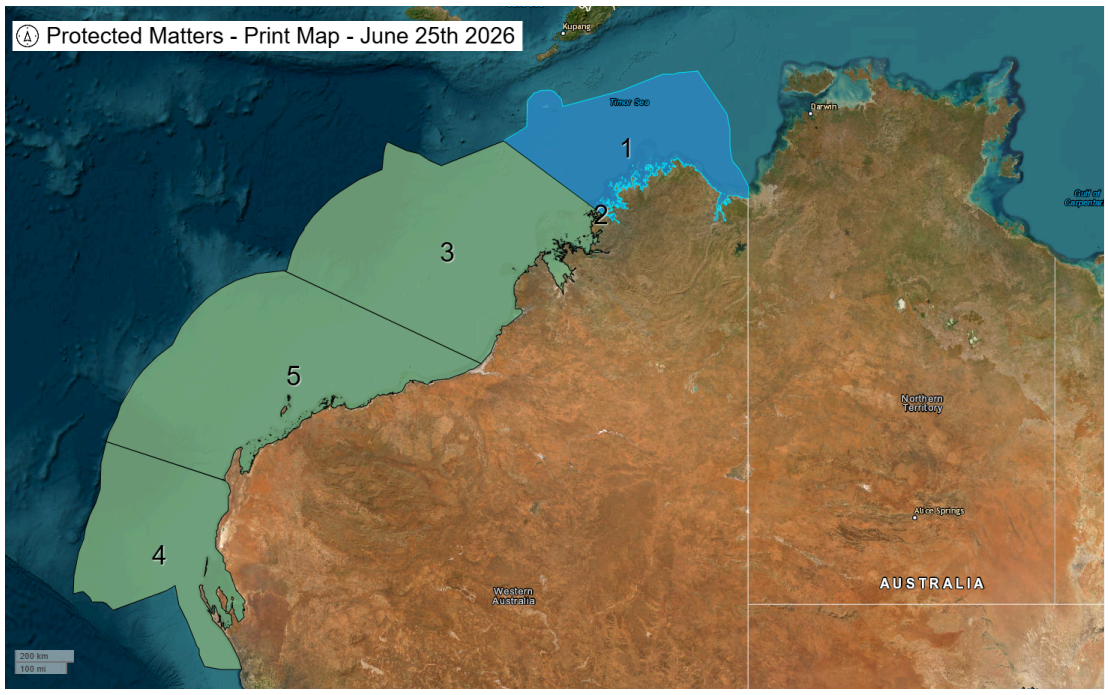


Figure 1: North West Marine Region - North (Part 1)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	8
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	59
Listed Migratory Species:	69

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	1
Listed Marine Species:	115
Whales and Other Cetaceans:	28
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	8
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	15
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	116
Key Ecological Features (Marine):	7
Biologically Important Areas:	33
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Natural		
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Ashmore reef national nature reserve	Within Ramsar site
Ord river floodplain	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat likely to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Saccolaimus saccolaimus nudicluniatus		
Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides		
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei		
Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus fuscus		
Dusky Sea Snake [1119]	Endangered	Species or species habitat likely to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat likely to occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Breeding likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sula dactylatra Masked Booby [1021]		Breeding likely to occur within area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Sula sula Red-footed Booby [1023]		Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat likely to occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat likely to occur within area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat likely to occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
[Acrocephalus orientalis](#) Oriental Reed-Warbler [59570]		Species or species habitat likely to occur within area
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Calidris ruficollis](#) Red-necked Stint [860]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Department of Climate Change, Energy, the Environment and Water	
Ashmore Reef National Nature Reserve [CHL_105218]	EXT

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Ashmore Reef National Nature Reserve	EXT	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat likely to occur within area overfly marine area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous minutus		
Black Noddy [824]		Breeding likely to occur within area
Anous stolidus		
Common Noddy [825]		Breeding likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius ruficapillus		
Red-capped Plover [881]		Species or species habitat likely to occur within area overfly marine area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus		
Pied Stilt, Black-winged Stilt [870]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat likely to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat likely to occur within area overfly marine area
Sula dactylatra Masked Booby [1021]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Sula sula Red-footed Booby [1023]		Breeding likely to occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area overfly marine area
Fish		
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding likely to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus fuscus Dusky Sea Snake [1119]	Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Sea Snake, Banded Sea Snake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake, Black-headed Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis inornatus Plain Sea Snake [1107]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Pacific Sea Snake, Large-headed Sea Snake [1112]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Peponocephala electra](#) Melon-headed Whale [47]		Species or species habitat may occur within area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area
[Pseudorca crassidens](#) False Killer Whale [48]		Species or species habitat likely to occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
[Stenella attenuata](#) Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
[Stenella coeruleoalba](#) Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Ashmore Reef	Recreational Use Zone (IUCN IV)
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Browse Island	Nature Reserve	WA
Lalang-gaddam	Marine Park	WA
Lawley River	National Park	WA
Lesueur Island	Nature Reserve	WA
Low Rocks	Nature Reserve	WA
Mijing	5(1)(h) Reserve	WA
Mitchell River	National Park	WA
Niiwalarra Islands	National Park	WA
North Kimberley	Marine Park	WA
Ord River	Nature Reserve	WA
Parry Lagoons	Nature Reserve	WA
Pelican Island	Nature Reserve	WA
Prince Regent	National Park	WA
Unnamed WA41775	5(1)(h) Reserve	WA
Unnamed WA44677	5(1)(h) Reserve	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Boskalis Cambridge Gulf Marine Sand Sourcing Project	2025/10106		Referral Decision
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Project Crux Cable Lay and Operation	2022/09441		Completed
Project Fitzroy Expansion Offshore Cable Lay	2023/09674		Referral Decision
Puffin Oil wells 7, 8 & 9 development	2005/2336		Completed
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Decommissioning of Challis Oilfield	2003/942	Controlled Action	Post-Approval
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval
Prelude Floating Liquefied Natural Gas Facility and Gas Field Development	2008/4146	Controlled Action	Post-Approval
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Wuudagu Bauxite Project	2019/8606	Controlled Action	Assessment Approach
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
AEC International Hydrocarbon Well Puffin 6	2000/36	Not Controlled Action	Completed
Audacious-3 oil drilling well	2003/1042	Not Controlled Action	Completed
Backpacker-1 Offshore Hydrocarbon Exploration Well	2001/300	Not Controlled Action	Completed
Coot-1 hydrocarbon exploration well, Permit Area AC/L2 or AC/L3	2001/296	Not Controlled Action	Completed
Crux-A and Crux-B appraisal wells, Petroleum Permit Area AC/P23	2006/2748	Not Controlled Action	Completed
Crux gas-liquids development in permit AC/P23	2006/3154	Not Controlled Action	Completed
Drilling of 12 Hydrocarbon Exploration Wells, Permit Area WA-371-P	2006/3005	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed
Drilling of Marina-1 Exploration Well	2007/3586	Not Controlled Action	Completed
Echuca Shoals-2 Exploration of Appraisal Well	2006/3020	Not Controlled Action	Completed
Exploration Drilling in AC/P17, AC/P18 and AC/P24	2001/359	Not Controlled Action	Completed
Exploration Well AC/P23	2001/234	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Kaleidoscope exploration well	2001/182	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3	2001/489	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
P30 Hydrocarbon Exploration Well	2001/293	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Ridges Iron Ore Project	2010/5494	Not Controlled Action	Completed
Saucepan 1 Exploration Well ACP23	2000/2	Not Controlled Action	Completed
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed
Strumbo-1 Gas Exploration Well Permit Area WA-288-P	2002/884	Not Controlled Action	Completed
Thresher-1 Well	2000/84	Not Controlled Action	Completed
Not controlled action (particular manner)			
2 (3D) Marine Seismic Surveys	2009/4994	Not Controlled Action (Particular Manner)	Completed
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2009/5104	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2008/4133	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey within permit area WA-318-P	2007/3879	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Marine Survey	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey, Permit AC/P 23	2005/2364	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, petroleum exploration permit AC/P33	2006/2918	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D seismic survey of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey WA-406-P Bonaparte Basin	2007/3904	Not Controlled Action (Particular Manner)	Post-Approval
AC/P37 3D Seismic Survey Ashmore Cartier	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Bassett 3D Marine Seismic Survey	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Canis 3D Marine Seismic Survey	2008/4492	Not Controlled Action (Particular Manner)	Post-Approval
Cartier East and Cartier West 3D Marine Seismic Surveys	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Audacious-5 appraisal well	2008/4327	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Exploration & Appraisal Wells Braveheart-1 & Cornea-3	2009/5160	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of two appraisal wells	2011/5840	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Campaign	2011/6047	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Campaign, Browse Basin, WA-341-P, AC-P36 and WA-343-P	2013/6898	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fishburn2D Marine Seismic Survey	2012/6659	Not Controlled Action (Particular Manner)	Post-Approval
Floyd 3D and Chisel 3D Seismic Surveys	2011/6220	Not Controlled Action (Particular Manner)	Post-Approval
Gicea 3D Marine Seismic Survey	2008/4389	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Gold 2D Marine Seismic Survey Permit Areas WA375P and WA376P	2009/4698	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular Manner)	Post-Approval
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Octantis 3D Marine Seismic Survey, Permit Area AC/P41 off northern Western Australia	2007/3369	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval
Sandalford 3D Seismic Survey	2012/6261	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
Searcher bathymetry & geochemical seismic survey, Brawse Basin,Timor Sea,WA	2013/6980	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Thoar 3D Marine Seismic Survey	2010/5668	Not Controlled Action (Particular Manner)	Post-Approval
Tiffany 3D Seismic Survey	2010/5339	Not Controlled Action (Particular Manner)	Post-Approval
Tow West Atlas wreck from present location to boundary of EEZ	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Zeppelin 3D Seismic Survey	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed
Ridges Iron Ore Project	2010/5351	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	North-west
Carbonate bank and terrace system of the Sahul Shelf	North-west
Continental Slope Demersal Fish Communities	North-west
Pinnacles of the Bonaparte Basin	North-west
Pinnacles of the Bonaparte Basin	North
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Reproduction	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa sahulensis Australian Humpback Dolphin [87942]	Foraging	Likely to occur
Sousa sahulensis Australian Humpback Dolphin [87942]	Reproduction	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Reproduction	Known to occur
Dugong		
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Reproduction	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Reproduction	Known to occur
Fregata minor Greater Frigatebird [1013]	Reproduction	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Reproduction	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sula leucogaster Brown Booby [1022]	Reproduction	Known to occur
Sula sula Red-footed Booby [1023]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Reproduction	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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-Office of Environment and Heritage, New South Wales
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-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
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-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 25-Jun-2026

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

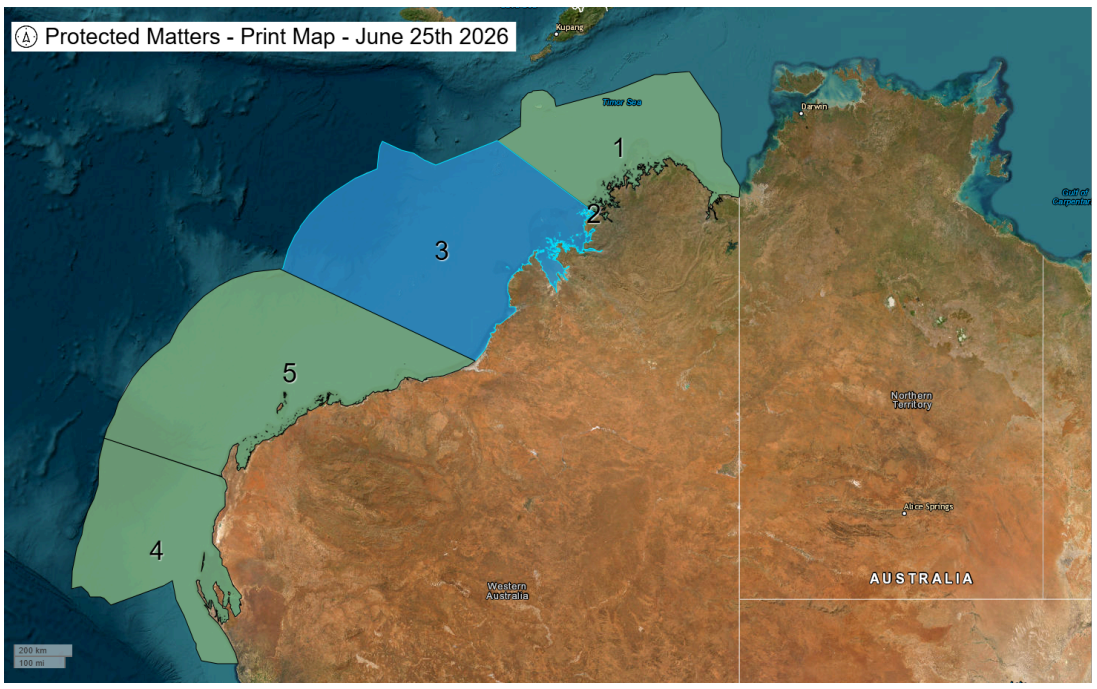


Figure 1: North West Marine Region - North Central (Part 2)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	9
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	63
Listed Migratory Species:	85

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	47
Commonwealth Heritage Places:	3
Listed Marine Species:	134
Whales and Other Cetaceans:	30
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	11
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	29
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	90
Key Ecological Features (Marine):	5
Biologically Important Areas:	38
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Natural		
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Eighty-mile beach	Within Ramsar site
Roebuck bay	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities	[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Chloebia gouldiae listed as Erythrura gouldiae Gouldian Finch [90091]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Breeding likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat likely to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
PLANT		
Seringia exastia Fringed Fire-bush [88920]	Critically Endangered	Species or species habitat may occur within area
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus fuscus Dusky Sea Snake [1119]	Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji, Tjalapa, Nampu [83160]	Vulnerable	Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Tiliqua scincoides intermedia Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat likely to occur within area
Varanus mertensi Mertens' Water Monitor [1568]	Endangered	Species or species habitat likely to occur within area
Varanus mitchelli Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sula dactylatra Masked Booby [1021]		Breeding likely to occur within area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Sula sula Red-footed Booby [1023]		Breeding likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Foraging, feeding or related behaviour likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat likely to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Airservices Australia	
Lot 43 P170055 [AGPR141]	WA
Australian Broadcasting Corporation	
Lot 32 D100296 [AGPR209]	WA
Bureau of Meteorology	
Lot 146 P023266 [AGPR5860]	WA
Lot 2163 P216952 [AGPR5858]	WA
Department of Agriculture, Fisheries and Forestry	
Lot 2275 P217326 [AGPR5881]	WA
Lot 2279 P217326 [AGPR5880]	WA
Department of Climate Change, Energy, the Environment and Water	

Commonwealth Land Name	State
Mermaid Reef - Rowley Shoals [CHL_105255]	WA
Scott Reef and Surrounds - Commonwealth Area [CHL_105480]	EXT
Yampi Defence Area [CHL_105418]	WA
Department of Defence	
ANC TS BROOME - Broome [DD_0130]	WA
Broome Training Depot [AGPR4286]	WA
Broome Training Depot [AGPR4285]	WA
Broome Training Depot [DD_1528]	WA
Derby Training Depot [DD_0696]	WA
Lot 655 P174895 [AGPR4397]	WA
Yampi Sound Training Area [DD_0697]	WA
Yampi Training Ground [AGPR4459]	WA
Department of Home Affairs	
Lot 202 P023724 [AGPR6110]	WA
Lot 257 P069434 [AGPR6092]	WA
Lot 532 DP 72758 [AGPR6095]	WA
Lot637 DP37858 [AGPR6096]	WA
Lot 812 P047361 [AGPR6111]	WA
Lot 823 P044086 [AGPR6108]	WA
Lot 824 P044086 [AGPR6109]	WA
National Indigenous Australians Agency	
Lot 1151 P215280 [AGPR6204]	WA
Lot 1239 P216847 [AGPR6203]	WA
Lot 129 P060227 [AGPR6206]	WA
Lot 132 P060227 [AGPR6208]	WA
Lot 1 S066584 [AGPR6207]	WA
Lot 200 P062535 [AGPR6192]	WA
Lot 2191 P217084 [AGPR6195]	WA

Commonwealth Land Name	State
Lot 223 P071424 [AGPR6202]	WA
Lot 2304 P217326 [AGPR6194]	WA
Lot 2540 P217611 [AGPR6198]	WA
Lot 2542 P217611 [AGPR6197]	WA
Lot 2554 P217611 [AGPR6199]	WA
Lot 2580 P217611 [AGPR6196]	WA
Lot 2873 P218501 [AGPR6193]	WA
Lot 2879 P218503 [AGPR6201]	WA
Lot 325 P024195 [AGPR6210]	WA
Lot 3 S057609 [AGPR6191]	WA
Lot 67 P222187 [AGPR6241]	WA
Lot 7 S061844 [AGPR6200]	WA
Lot 864 P059296 [AGPR6211]	WA
Services Australia	
Lot 1247 P216847 [AGPR6042]	WA
Lot 256 P024193 [AGPR6043]	WA
Lot 69 P015330 [AGPR6041]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Mermaid Reef - Rowley Shoals	WA	Listed place
Scott Reef and Surrounds - Commonwealth Area	EXT	Listed place
Yampi Defence Area	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Roosting likely to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Foraging, feeding or related behaviour likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat likely to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting likely to occur within area overfly marine area
Sula dactylatra Masked Booby [1021]		Breeding likely to occur within area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Sula sula Red-footed Booby [1023]		Breeding likely to occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting likely to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
[Bhanotia fasciolata](#) Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Corythoichthys amplexus](#) Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
[Corythoichthys flavofasciatus](#) Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
[Corythoichthys intestinalis](#) Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
[Corythoichthys schultzi](#) Schultz's Pipefish [66205]		Species or species habitat may occur within area
[Cosmocampus banneri](#) Roughridge Pipefish [66206]		Species or species habitat may occur within area
[Doryrhamphus dactyliophorus](#) Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Foraging, feeding or related behaviour likely to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus fuscus Dusky Sea Snake [1119]	Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis coggeri Cogger's Sea Snake, Black-headed Sea Snake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis macdowelli as Hydrophis mcdowelli		
MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major		
Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus		
Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii		
Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii		
Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Hydrophis zweifeli as Enhydrina schistosa		
Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area
Lepidochelys olivacea		
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Indopacetus pacificus](#) Longman's Beaked Whale [72]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Kimberley	Habitat Protection Zone (IUCN IV)
Kimberley	Habitat Protection Zone (IUCN IV)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Kimberley	National Park Zone (IUCN II)
Mermaid Reef	National Park Zone (IUCN II)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea		
Olive Ridley Turtle [1767]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Adele Island	Nature Reserve	WA
Bardi Jawi Gaarra	Marine Park	WA
Broome Bird Observatory	5(1)(h) Reserve	WA
Broome Wildlife Centre	5(1)(h) Reserve	WA
Coulomb Point	Nature Reserve	WA
Eighty Mile Beach	Marine Park	WA
Jinmarnkur	Conservation Park	WA
Jinmarnkur Kulja	Nature Reserve	WA
Lacepede Islands	Nature Reserve	WA
Lalang-gaddam	Marine Park	WA
Mayala	Marine Park	WA
North Kimberley	Marine Park	WA
Rowley Shoals	Marine Park	WA
Scott Reef	Nature Reserve	WA
Swan Island	Nature Reserve	WA
Tanner Island	Nature Reserve	WA
Unnamed WA28968	5(1)(h) Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA37168	5(1)(h) Reserve	WA
Unnamed WA44669	5(1)(h) Reserve	WA
Unnamed WA44673	5(1)(h) Reserve	WA
Unnamed WA51105	5(1)(h) Reserve	WA
Unnamed WA51162	5(1)(h) Reserve	WA
Unnamed WA51497	5(1)(h) Reserve	WA
Unnamed WA51583	5(1)(h) Reserve	WA
Unnamed WA51617	5(1)(h) Reserve	WA
Unnamed WA51932	5(1)(h) Reserve	WA
Unnamed WA52354	5(1)(h) Reserve	WA
Unnamed WA53015	Nature Reserve	WA
Yawuru Nagulagun / Roebuck Bay	Marine Park	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
2 geotechnical surveys - preliminary and final	2006/2886		Completed
Boskalis Cambridge Gulf Marine Sand Sourcing Project	2025/10106		Referral Decision
Broome Wharf Extension Project	2024/09823		Completed
Browse Carbon Capture and Storage Project	2024/10028		Referral Decision
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Cockatoo Island Multi-User Supply Base, WA	2017/7986		Assessment
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Derby Tidal Power Project	2010/5544		Assessment
Koolan Island Operations	2022/09392		Assessment

Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Ocean Barramundi Expansion Project	2022/09272		Assessment
Controlled action			
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Broome Boating Facility	2021/9098	Controlled Action	Referral Decision
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Derby Tidal Power Proposal	2001/398	Controlled Action	Completed
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Duchess Paradise Project	2011/6033	Controlled Action	Completed
Great Northern Pipeline - 630 km buried gas pipeline	2009/5257	Controlled Action	Completed
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval
Iron ore mine	2006/2522	Controlled Action	Post-Approval
Pluton Irvine Island Iron Ore Project	2011/6064	Controlled Action	Proposed Decision
Shamrock Station Irrigation Project, west Kimberley region, WA	2017/8004	Controlled Action	Post-Approval
Torosa South Initial Appraisal Drilling	2007/3500	Controlled Action	Completed
Not controlled action			
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed
Aquaculture - Barramundi grow out, Yampi Sound	2005/2476	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed
Establish a 4m wide trace line along the road allignment for James Price Point	2010/5682	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Kimberley Marine Offloading Facility	2020/8736	Not Controlled Action	Completed
Kimberley Multi-commodity Exploration Programme, WA	2013/6839	Not Controlled Action	Completed
Koolan Island Mine - Reconstruction of seawall and capital dewatering of mine pit,130km northwest of	2016/7848	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Port of Broome Channel Optimisation Project, West Roebuck Bay, WA	2018/8162	Not Controlled Action	Completed
Power Station Upgrade	2001/357	Not Controlled Action	Completed
Power Station Upgrade (South Port Site)	2001/414	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Wastewater Treatment Plant	2008/4545	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D marine seismic Survey - Maxima 3D MSS	2006/2945	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
Acacia East Pit Cutback Mining Project,northern Kimberley, WA	2013/6752	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Construction of a 43km long sealed access road to the Browse LNG precinct	2011/5852	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Endurance 3D Marine Seismic Data Acquisition Survey	2007/3667	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Establishment of AQIS washdown facility, logistics support base and ancillary businesses	2012/6364	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Geoscience Australia - Marine survey in Browse Basin to acquire data to assist assessment of CO2 sto	2013/6747	Not Controlled Action (Particular Manner)	Post-Approval
Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey	2007/3839	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Koolama 2D Seismic Survey Dampier Basin	2010/5420	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled Action (Particular Manner)	Post-Approval
Pilot Appraisal Well - Torosa South 1	2008/3991	Not Controlled Action (Particular Manner)	Post-Approval
Repsol 3d & 2D Marine Seismic Survey	2012/6658	Not Controlled Action (Particular Manner)	Post-Approval
Rosebud 3D Marine Seismic Survey in WA-30-R and TR/5	2012/6493	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
Scott Reef Seismic Research	2006/2647	Not Controlled Action (Particular Manner)	Post-Approval
Torosa-5 Apraisal Well, WA-30-R	2008/4430	Not Controlled Action (Particular Manner)	Post-Approval
Tridacna 3D Ocean Bottom Cable Marine Seismic Survey	2011/5959	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Veritas Voyager 2D Marine Seismic Survey	2009/5151	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Woodside Southern Browse 3D Seismic Survey, WA	2007/3534	Not Controlled Action (Particular Manner)	Post-Approval
Zeemeermin MC3D seismic survey, Browse Basin, Offshore WA	2009/5023	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Aurora extension MC3D Marine Seismic Survey	2011/5887	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed
Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex	2006/2625	Referral Decision	Completed
Field efficacy trial of the Hisstory bait for feral cats, at Yampi Sound Defence Training Area, Kimb	2017/7977	Referral Decision	Completed
Kimberley Multi-commodity Exploration Program	2013/6780	Referral Decision	Completed
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed
Tidal Power Generation Turbine	2009/5235	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Argo Abyssal Plain with the Scott Plateau	North-west
Continental Slope Demersal Fish Communities	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Reproduction	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa sahulensis Australian Humpback Dolphin [87942]	Foraging	Likely to occur
Sousa sahulensis Australian Humpback Dolphin [87942]	Reproduction	Likely to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Migration	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Reproduction	Known to occur
Dugong		
Dugong dugon Dugong [28]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Dugong dugon Dugong [28]	Migration	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
River shark		
Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Reproduction	Known to occur
Pristis pristis Largetooth Sawfish [60756]	Foraging	Known to occur
Pristis pristis Largetooth Sawfish [60756]	Reproduction	Known to occur
Pristis zijsron Green Sawfish [68442]	Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]	Reproduction	Known to occur
Seabirds		
Fregata ariel Lesser Frigatebird [1012]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Fregata minor Greater Frigatebird [1013]	Reproduction	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Resting	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Reproduction	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sula leucogaster Brown Booby [1022]	Reproduction	Known to occur
Sula sula Red-footed Booby [1023]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Megaptera novaeangliae		
Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 25-Jun-2026

[Summary](#)
[Details](#)
- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

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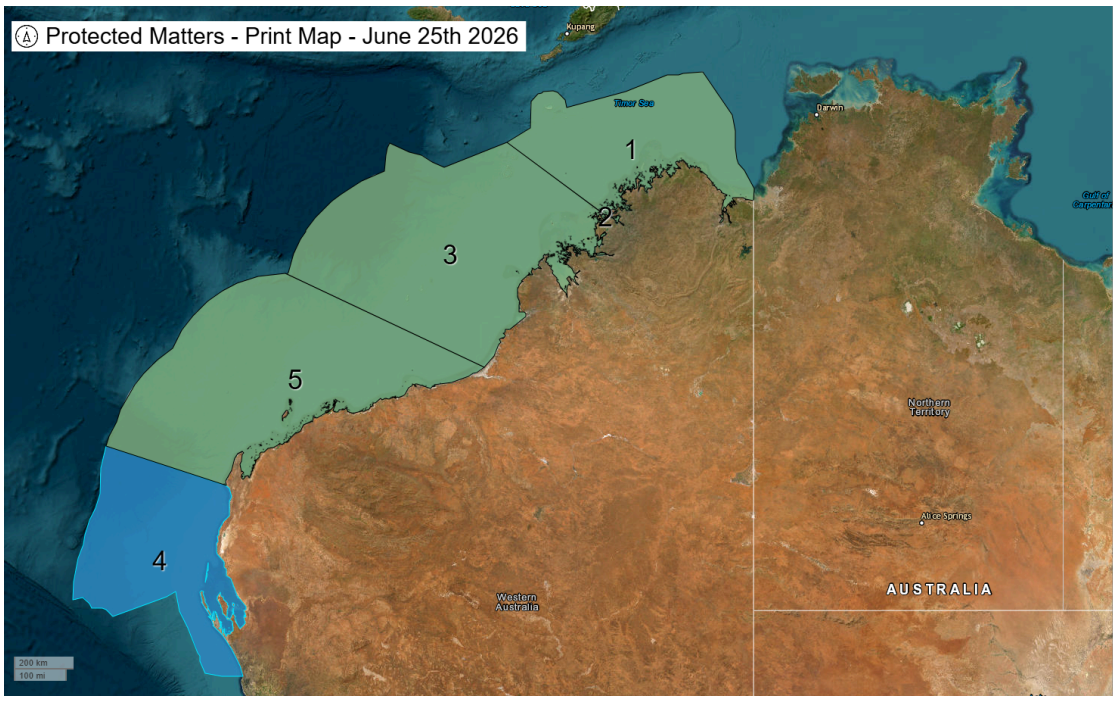


Figure 1: North West Marine Region - South (Part 4)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	4
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	84
Listed Migratory Species:	80

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	7
Commonwealth Heritage Places:	2
Listed Marine Species:	121
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	14
Habitat Critical to the Survival of Marine Turtles:	2

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	29
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	43
Key Ecological Features (Marine):	6
Biologically Important Areas:	23
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Ningaloo Coast	WA	Declared property
Shark Bay, Western Australia	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
HMAS Sydney II and HSK Kormoran Shipwreck Sites	EXT	Listed place
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus leucopterus White-winged Fairy-wren (Dirk Hartog Island), Dirk Hartog Black-and-White Fairy-wren [26004]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
[Zanda latirostris listed as Calyptorhynchus latirostris](#) Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding likely to occur within area
FISH		
[Milyeringa veritas](#) Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Bettongia lesueur lesueur](#) Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Translocated population known to occur within area
[Bettongia penicillata ogilbyi](#) Woylie [66844]	Endangered	Species or species habitat likely to occur within area
[Dasyurus geoffroii](#) Chuditch, Western Quoll [330]	Vulnerable	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Lagorchestes hirsutus bernieri Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Translocated population known to occur within area
Lagorchestes hirsutus dorreae Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Translocated population known to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Translocated population known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Translocated population known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Perameles bougainville Shark Bay Bandicoot [278]	Endangered	Translocated population known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat likely to occur within area
Pseudomys fieldi Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Androcalva bivillosa		
Straggling Androcalva [87807]	Critically Endangered	Species or species habitat may occur within area
Beyeria lepidopetala		
Small-petalled Beyeria, Short-petalled Beyeria [18362]	Endangered	Species or species habitat likely to occur within area
Caladenia barbarella		
Small Dragon Orchid, Common Dragon Orchid [68686]	Endangered	Species or species habitat may occur within area
Caladenia bryceana subsp. cracens		
Northern Dwarf Spider-orchid [64556]	Vulnerable	Species or species habitat may occur within area
Caladenia elegans		
Elegant Spider-orchid [56775]	Endangered	Species or species habitat may occur within area
Caladenia hoffmanii		
Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
Drakaea concolor		
Kneeling Hammer-orchid [56777]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus beardiana		
Beard's Mallee [18933]	Vulnerable	Species or species habitat likely to occur within area
Lechenaultia chlorantha		
Kalbarri Leschenaultia [16763]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Stachystemon nematophorus](#) Three-flowered Stachystemon [81447]	Vulnerable	Species or species habitat likely to occur within area
[Wurmbea tubulosa](#) Long-flowered Nancy [12739]	Endangered	Species or species habitat may occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Ctenotus zastictus](#) Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Egernia stokesii badia](#) Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area
SPIDER		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes		
Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa glareola		
Wood Sandpiper [829]		Roosting likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Australian Postal Corporation	
Lot 1 S018861 [AGPR7043]	WA
Department of Climate Change, Energy, the Environment and Water	
HMAS Sydney II and HSK Kormoran Shipwreck Sites [CHL_106062]	EXT
Ningaloo Marine Area - Commonwealth Waters [CHL_105548]	WA
Department of Defence	
JORN Radar Site - Carnarvon [DD_3382]	WA
Department of Home Affairs	
Lot 615 P023695 [AGPR6093]	WA
Lot827 DP55249 [AGPR6100]	WA
Services Australia	
Lot 345 D054621 [AGPR4717]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		

Name	State	Status
HMAS Sydney II and HSK Kormoran Shipwreck Sites	EXT	Listed place
Natural		
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting likely to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Larus pacificus Pacific Gull [811]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua		
Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii		
Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis as Sterna nereis		
Fairy Tern [82949]		Breeding likely to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa brevipes as Heteroscelus brevipes		
Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa glareola		
Wood Sandpiper [829]		Roosting likely to occur within area overfly marine area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
Bulbonaricus brauni		
Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei		
Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys brachysoma		
Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus		
Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus negrosensis		
Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris		
Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris		
Tiger Pipefish [66217]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Idiotropiscis australe as Acentronura australe Southern Pygmy Pipehorse [74958]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus pooleorum](#) Shark Bay Sea Snake [66061]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)
Abrolhos	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)
Abrolhos	Special Purpose Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
Nov-Feb		
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Oct - Mar		

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Bernier And Dorre Islands	Nature Reserve	WA
Cape Range (South)	National Park	WA
Chinamans Pool	Nature Reserve	WA
Dirk Hartog Island	National Park	WA
Faure Island	Private Nature Reserve	WA
Francois Peron	National Park	WA
Freycinet, Double Islands etc	Nature Reserve	WA
Hamelin Pool	Marine Nature Reserve	WA
Hamelin Station	Conservation Reserve	WA
Kalbarri	National Park	WA
Koks Island	Nature Reserve	WA
Monkey Mia Reserve	5(1)(h) Reserve	WA
Nanga Station	NRS Addition - Gazettal in Progress	WA
Ningaloo	Marine Park	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
One Tree Point	Nature Reserve	WA
Part Murchison house	NRS Addition - Gazettal in Progress	WA
Sedimentary Deposits Reserve	5(1)(g) Reserve	WA

Protected Area Name	Reserve Type	State
Shark Bay	Marine Park	WA
Shell Beach	Conservation Park	WA
Tamala Pastoral Lease (Part)	NRS Addition - Gazettal in Progress	WA
Unnamed WA26400	5(1)(h) Reserve	WA
Unnamed WA37338	5(1)(h) Reserve	WA
Unnamed WA37383	5(1)(h) Reserve	WA
Unnamed WA37500	5(1)(g) Reserve	WA
Unnamed WA44688	5(1)(h) Reserve	WA
Unnamed WA49144	Conservation Park	WA
Yaringga	NRS Addition - Gazettal in Progress	WA
Zuytdorp	Nature Reserve	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Midwest Offshore Wind Farm	2022/09264		Assessment
Monkey Mia Dolphin Resort Solar Farm	2023/09700		Referral Decision
Murchison Hydrogen Renewables Project	2022/09217		Assessment
Controlled action			
Boating Facility	2002/830	Controlled Action	Completed
Coburn Mineral Sand Project	2003/1221	Controlled Action	Post-Approval
Mauds Landing Marina	2000/98	Controlled Action	Completed
Nava-1 Cable System	2001/510	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Shark Bay Resources Dredging	2020/8717	Controlled Action	Post-Approval
Shark Bay Salt Facilities upgrade for direct ocean disposal of bitterns discharge	2011/5984	Controlled Action	Completed
Not controlled action			
Accommodation Units Sunday Island Bay, Dirk Hartog Island, WA	2015/7540	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
archaeological surveys & excavation at historic sites, Cape Inscription	2006/3027	Not Controlled Action	Completed
Boating Facility	2002/832	Not Controlled Action	Completed
Carnarvon Power Station Development Project	2010/5669	Not Controlled Action	Completed
Clearing of vegetation for borrow pit and infrastructure areas	2017/7947	Not Controlled Action	Completed
Drilling between Kalbarri and Cliff Head	2005/2185	Not Controlled Action	Completed
Expansion of Monkey Mia Resort	2003/1146	Not Controlled Action	Completed
Extention to the existing Blind Strait Black Lip Pearl Oyster Farm	2004/1342	Not Controlled Action	Completed
Flood Management works	2006/3127	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Realignment of Access track, Bottle Bay, Shark Bay	2004/1780	Not Controlled Action	Completed
Useless Loop Road Upgrade	2000/83	Not Controlled Action	Completed
Not controlled action (particular manner)			

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Sampling of Stromatolites, additional sites, Mamelin Pool,WA	2013/7071	Not Controlled Action (Particular Manner)	Post-Approval
Sampling of Stromatolites and Sediments	2012/6307	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Supply of road building material areas Shark Bay Region WA	2012/6280	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Useless Loop Port Maintenance Works and Infrastructure Upgrade	2009/4791	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Geoscientific field-trip to Shark Bay	2012/6380	Referral Decision	Completed
Power Station Development	2009/4957	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 90-120m depth	South-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Wallaby Saddle	North-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dugong		

Scientific Name	Behaviour	Presence
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Migration	Known to occur
Dugong dugon Dugong [28]	Reproduction	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Reproduction	Low density
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Hydroprogne caspia Caspian Tern [808]	Foraging	Known to occur
Larus pacificus Pacific Gull [811]	Foraging	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging	Likely to occur
Onychoprion fuscatus Sooty Tern [90682]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Puffinus assimilis Little Shearwater [59363]	Foraging	Likely to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Sternula nereis Fairy Tern [82949]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Eubalaena australis Southern Right Whale [40]	Migration	
Eubalaena australis Southern Right Whale [40]	Reproduction	
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 25-Jun-2026

[Summary](#)
[Details](#)
- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgements](#)

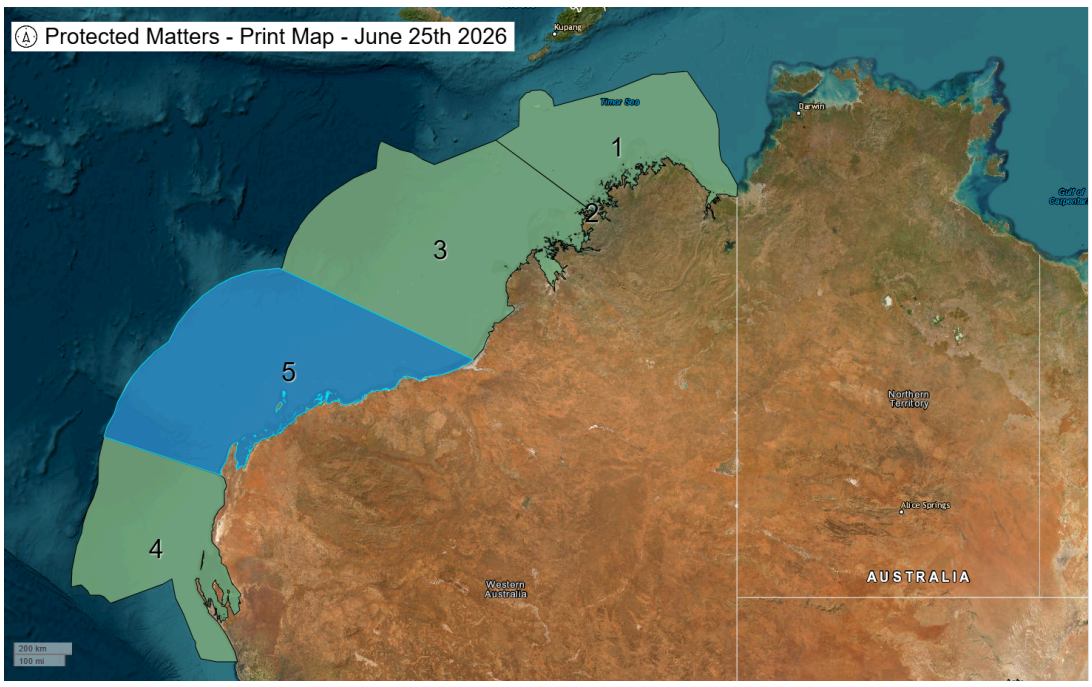


Figure 1: North West Marine Region - South Central (Part 3)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	2
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	69
Listed Migratory Species:	90

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	93
Commonwealth Heritage Places:	2
Listed Marine Species:	133
Whales and Other Cetaceans:	33
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	11
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	57
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	301
Key Ecological Features (Marine):	6
Biologically Important Areas:	35
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Murujuga Cultural Landscape	WA	Declared property
Ningaloo Coast	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Natural		
The Ningaloo Coast	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Eighty-mile beach	Within Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
CRUSTACEAN		
Kumonga exleyi		
Cape Range Remipede [86875]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Milyeringa justitia		
Barrow Cave Gudgeon [86867]	Endangered	Species or species habitat likely to occur within area
Milyeringa veritas		
Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat likely to occur within area
Ophisternon candidum		
Blind Cave Eel [66678]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Bettongia lesueur Barrow and Boodie Islands subspecies		
Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Translocated population known to occur within area
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus barrowensis		
Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Translocated population known to occur within area
Lagorchestes conspicillatus conspicillatus		
Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Translocated population known to occur within area
Lagorchestes hirsutus Central Australian subspecies		
Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Macrotis lagotis		
Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Pseudomys fieldi](#) Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely to occur within area
[Rhinonicteris aurantia (Pilbara form)](#) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat likely to occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
[Minuria tridens](#) Minnie Daisy [13753]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Ctenotus zastictus](#) Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
[Lerista nevinae](#) Nevin's Slider [85296]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Liasis olivaceus barroni		
Pilbara Olive Python [66699]	Vulnerable	Species or species habitat likely to occur within area
Liopholis kintorei		
Great Desert Skink, Tjakura, Warrarna, Mulyamiji, Tjalapa, Nampu [83160]	Vulnerable	Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sula dactylatra Masked Booby [1021]		Breeding likely to occur within area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Arenaria interpres		
Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba		
Sanderling [875]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa glareola Wood Sandpiper [829]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Australian Maritime Safety Authority	
Lot 267 P066689 [AGPR5847]	WA
Lot 3248 P216031 [AGPR5848]	WA
Lot 375 P208153 [AGPR262]	WA
Lot 3959 P216877 [AGPR5846]	WA
Lot 3976 P216877 [AGPR5845]	WA
Lot 5478 P185135 [AGPR5849]	WA
Lot 591 P056139 [AGPR5851]	WA
Lot 682 P061231 [AGPR5850]	WA
Australian Postal Corporation	
Lot 1549 P213670 [AGPR7196]	WA
Lot 3908 P216465 [AGPR7132]	WA
Bureau of Meteorology	

Commonwealth Land Name	State
Lot 1102 P217148 [AGPR5866]	WA
Lot 819 P211578 [AGPR5865]	WA
Lot 973 P216414 [AGPR5863]	WA
Department of Agriculture, Fisheries and Forestry	
Lot 1260 P213923 [AGPR5883]	WA
Lot 1386 P213671 [AGPR5882]	WA
Lot 5639 P216779 [AGPR5884]	WA
Department of Climate Change, Energy, the Environment and Water	
Learmonth Air Weapons Range Facility [CHL_105551]	WA
Ningaloo Marine Area - Commonwealth Waters [CHL_105548]	WA
Department of Defence	
Exmouth Area A VLF Transmitter Station [DD_0083]	WA
Exmouth Area B Admin and HF Transmitter [DD_0082]	WA
Exmouth RAAF Radar Site Twin Tanks [DD_0973]	WA
Exmouth RAAF Radar Site - Vlaming Head [DD_0974]	WA
Karratha / Dampier Rifle Range [DD_3218]	WA
Learmonth Air Weapons Range [DD_0961]	WA
Learmonth RAAF base [AGPR4436]	WA
Learmonth RAAF base [AGPR4430]	WA
Learmonth RAAF base [AGPR4432]	WA
Learmonth RAAF base [AGPR4433]	WA
Learmonth RAAF base [AGPR4434]	WA
Learmonth RAAF base [AGPR4437]	WA
Learmonth RAAF base [AGPR4428]	WA
Learmonth RAAF base [AGPR4429]	WA
Learmonth RAAF base [AGPR4425]	WA
Learmonth RAAF base [AGPR4462]	WA
Learmonth RAAF base [AGPR4423]	WA

Commonwealth Land Name	State
Learmonth RAAF base [AGPR4418]	WA
Learmonth RAAF base [AGPR4419]	WA
Learmonth RAAF base [AGPR4414]	WA
Learmonth RAAF base [AGPR4435]	WA
Learmonth RAAF base [AGPR4431]	WA
Learmonth RAAF base [AGPR4466]	WA
Learmonth RAAF base [AGPR4413]	WA
Learmonth RAAF base [AGPR4463]	WA
Learmonth RAAF base [AGPR4417]	WA
Learmonth RAAF base [AGPR4416]	WA
Learmonth RAAF base [AGPR4415]	WA
Learmonth RAAF base [AGPR4467]	WA
Learmonth RAAF base [AGPR4464]	WA
Learmonth WW2 Transmitter Site [DD_1355]	WA
Lot 148 Plan P215203 [AGPR4394]	WA
Lot 525 P168696 [AGPR4471]	WA
Patrol Boat Berth Dampier [DD_3256]	WA
Port Hedland Training Depot [DD_0773]	WA
RAAF Learmonth [DD_0960]	WA
Taylor Barracks [AGPR4457]	WA
Taylor Barracks [AGPR4455]	WA
Taylor Barracks [AGPR4456]	WA
Taylor Barracks - Karratha [DD_1348]	WA
Department of Home Affairs	
120 P017820 [AGPR007602]	WA
Lot 1172 P214561 [AGPR6128]	WA
Lot 1316 P214560 [AGPR4734]	WA

Commonwealth Land Name	State
Lot 1 D093901 [AGPR6123]	WA
Lot 22 P013834 [AGPR6124]	WA
Lot 307 P051763 [AGPR6118]	WA
Lot 311 P051763 [AGPR6115]	WA
Lot 328 P051763 [AGPR6117]	WA
Lot 329 P051763 [AGPR6116]	WA
Lot 371 P047355 [AGPR6084]	WA
Lot 374 P047355 [AGPR6086]	WA
Lot 381 P047355 [AGPR6088]	WA
Lot 385 P047355 [AGPR6087]	WA
Lot 388 P047355 [AGPR6089]	WA
Lot 420 P045431 [AGPR6081]	WA
Lot 421 P045431 [AGPR6079]	WA
Lot 43 P048174 [AGPR6113]	WA
Lot 447 P049116 [AGPR6080]	WA
Lot 448 P049116 [AGPR6078]	WA
Lot 473 P049116 [AGPR6083]	WA
Lot 479 P051753 [AGPR6090]	WA
Lot 565 P055507 [AGPR6121]	WA
Lot 5702 P216778 [AGPR6127]	WA
Lot 5704 P216778 [AGPR6122]	WA
Lot 5706 P216778 [AGPR6119]	WA
Lot 5719 P216778 [AGPR6129]	WA
Lot 5724 P216778 [AGPR6120]	WA
Lot 5728 P216778 [AGPR6125]	WA
Lot 5746 P216779 [AGPR6126]	WA
Lot 60 P048174 [AGPR6112]	WA

Commonwealth Land Name	State
Lot 683 P061231 [AGPR6131]	WA
Lot 691 P061231 [AGPR6130]	WA
Department of Infrastructure, Transport, Regional Development, Communications and the Arts	
Port Hedland Airport [AGPR5578]	WA
Services Australia	
Lot 3013 P215197 [AGPR6049]	WA
Lot 5734 P216778 [AGPR6050]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting likely to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting likely to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Larus pacificus Pacific Gull [811]		Breeding likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Stiltia isabella Australian Pratincole [818]		Roosting likely to occur within area overfly marine area
Sula dactylatra Masked Booby [1021]		Breeding likely to occur within area
Sula leucogaster Brown Booby [1022]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat likely to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting likely to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Idiotropiscis larsonae as Acentronura larsonae Helen's Pygmy Pipehorse [74959]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus duboisii](#) Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus mosaicus as Aipysurus eydouxii](#) Mosaic Sea Snake [87261]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Current Scientific Name	Status	Type of Presence
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Indopacetus pacificus](#) Longman's Beaked Whale [72]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Dampier	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Dampier	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		

Scientific Name	Behaviour	Presence
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Nov-Feb		
Caretta caretta		
Loggerhead Turtle [1763]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bedout Island	Nature Reserve	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Burnside And Simpson Island	Nature Reserve	WA
Cape Range	National Park	WA
Cape Range (South)	National Park	WA
Eighty Mile Beach	Marine Park	WA
Giralia	NRS Addition - Gazettal in Progress	WA
Gnandaroo Island	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Great Sandy Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Jarrkunpungu	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Kujungurru Warrarn	Nature Reserve	WA
Kujungurru Warrarn	Conservation Park	WA
Little Rocky Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Murujuga	5(1)(h) Reserve	WA
Murujuga	National Park	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
North Turtle Island	Nature Reserve	WA
Rocky Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Tent Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA36907	5(1)(h) Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA36909	5(1)(h) Reserve	WA
Unnamed WA36910	5(1)(h) Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA38287	5(1)(h) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA
Unnamed WA44672	5(1)(h) Reserve	WA
Unnamed WA52366	Nature Reserve	WA
Unnamed WA53015	Nature Reserve	WA
Victor Island	Nature Reserve	WA
Weld Island	Nature Reserve	WA
Whalebone Island	Nature Reserve	WA
Whitmore,Roberts,Doole Islands And Sandalwood Landing	Nature Reserve	WA
Y Island	Nature Reserve	WA

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778		Completed
Ashburton Infrastructure Project	2021/9064		Completed
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081		Completed
Balla Balla Export Facilities ? Design Variation	2022/09254		Assessment

Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Burrup Common User Transmission Infrastructure	2022/09407		Post-Approval
Burrup Peninsula Seawater Supply Scheme Upgrade	2023/09698		Completed
Dampier Cargo Wharf Extension and Landside Redevelopment Project	2022/09237		Post-Approval
Dampier Seawater Desalination Plant	2022/09395		Completed
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Offshore Dredge Spoil Disposal - Mardie Project	2024/10054		Referral Decision
Optimised Mardie Project ? Additional Triodia Grassland Habitat Clearing	2024/10094		Referral Decision
Optimised Mardie Solar Salt Project	2022/9169		Post-Approval
Port Hedland Green Steel Project - Stage 1	2023/09764		Assessment
Project Highclere Cable Lay and Operation	2022/09203		Completed
Ridley Magnetite Project	2023/09477		Referral Decision
Single Jetty Deep Water Port Renewable Hub, WA	2021/8942		Assessment

Title of referral	Reference	Referral Outcome	Assessment Status
Winu Copper and Gold Mine (Winu Project)	2024/09804		Completed
Action clearly unacceptable			
Asian Renewable Energy Hub Revised Proposal, WA	2021/8891	Action Clearly Unacceptable	Completed
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Additional Rail Infrastructure between Herb Elliott Port Facility and Cloudbreak Mine Site	2010/5513	Controlled Action	Post-Approval
Ammonium Nitrate Project	2010/5423	Controlled Action	Completed
Anketell Point Iron Ore Processing & Export Port	2009/5120	Controlled Action	Post-Approval
Asian Renewable Energy Hub, 220 km east of Port Hedland, Western Australia	2017/8112	Controlled Action	Post-Approval
Balmoral South Iron Ore Mine	2008/4236	Controlled Action	Post-Approval
Binowee Iron Ore Project	2001/366	Controlled Action	Proposed Decision
Burrup North East Sand Mining Project	2008/4611	Controlled Action	Completed
Cape Lambert Port B Development	2008/4032	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Construction and operation of a Solar Salt Project, SW Onslow, WA	2016/7793	Controlled Action	Assessment Approach
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of an iron ore mine and associated infrastructure	2010/5630	Controlled Action	Assessment Approach

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Duplication of the Dampier Highway Stages 2 & 6	2010/5419	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Eramurra Industrial Salt Project, near Karratha, WA	2019/8448	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Great Northern Pipeline - 630 km buried gas pipeline	2009/5257	Controlled Action	Completed
Learmonth Bundle Site and Launchway, WA	2017/8079	Controlled Action	Completed
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
North Star Magnetite Project	2012/6689	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
North West Shelf Gas Venture Phase VI Expansion	2007/3436	Controlled Action	Referral Decision
Perdaman Urea Project, near Karratha, WA	2018/8383	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Port Hedland Outer Harbour Development and associated marine and terrestrial in	2008/4159	Controlled Action	Post-Approval
Port Hedland Spoilbank Marina, WA	2019/8520	Controlled Action	Post-Approval
Proposed technical ammonium nitrate production facility	2008/4546	Controlled Action	Post-Approval
Proposed West Pilbara Iron Ore Project	2009/4706	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
site preparations	2005/2391	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Widening and resurfacing two principal roads servicing the Dampier Port Authori	2010/5677	Controlled Action	Completed
Yannarie Solar Salt Project	2004/1679	Controlled Action	Completed
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
Ammonia Plant	2001/199	Not Controlled Action	Completed
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Cape Lambert Port A Marine Structures Refurbishment Project	2018/8370	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Construct 110km buried natural gas pipeline from Onslow, connecting to Dampier/Bunbury natural gas p	2013/7039	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Construction of a Commodities Berth, Wharf and Associated Infrastructure	2008/4129	Not Controlled Action	Completed
Construction of Loadout Facility and Laydown Area	2002/598	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Deep Gorge Boardwalk, Murujuga National Park, WA	2018/8283	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Development of Industrial Land, Port of Dampier	2003/1293	Not Controlled Action	Completed
Development of iron ore facilities	2013/7013	Not Controlled Action	Completed
Development of iron ore resources in eastern Pilbara region, including port at P	2004/1562	Not Controlled Action	Completed
Differential Global Positioning System (DGPS)	2001/445	Not Controlled Action	Completed
Dimethyl ether plant	2001/509	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Expansion of the Sino Iron Ore Mine and export facilities, Cape Preston, WA	2017/7862	Not Controlled Action	Completed
Expansion Proposal, Mineralogy Cape Preston Iron Ore Project, Cape Preston, WA	2009/5010	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
Gulf Fishing Lodge	2010/5499	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Horizon Power South Hedland Transmission Line, WA	2012/6551	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Iron Bridge Port Facility, Port Hedland, WA	2015/7565	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
King Bay East Rock Quarry & Industrial Estate Development	2003/1150	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Mahimahi Aquaculture Facility	2002/891	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Methanol manufacturing	2001/528	Not Controlled Action	Completed
Methanol plant	2001/521	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Onslow Power Infrastructure Upgrade Project, Onslow, WA	2014/7314	Not Controlled Action	Completed
Onslow Water Supply Infrastructure Upgrade Project, Onslow, WA	2014/7329	Not Controlled Action	Completed
Pilbara Bulk Ore Transport System Project, WA	2016/7637	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Pluto-North West Shelf Interconnector, Burrup Peninsula, WA	2018/8353	Not Controlled Action	Completed
Port Expansion and Dredging	2003/1265	Not Controlled Action	Completed
Port Hedland Channel Risk and Optimisation Project, WA	2017/7915	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Rail and Port Facilities	2001/474	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed
Stages 1 & 2 Port of Dampier Security Upgrade & Associated Works	2004/1751	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telfer Gold Mine Project - Mine and Borefield Extensions and Upgrade of Storage	2002/787	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Walkway Lighting Upgrade	2009/4965	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Widening of MOF Road	2005/2305	Not Controlled Action	Completed
Woodside Project Facilities Increase	2006/3191	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Additional Rail Infrastructure	2012/6314	Not Controlled Action (Particular Manner)	Post-Approval
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Algae Farm and Processing Facilities	2012/6596	Not Controlled Action (Particular Manner)	Post-Approval
Ammonia Plant, Murujuga Burrup Peninsula - Renewable Hydrogen Project	2020/8739	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Cape Preston East - Iron Ore Export Facilities, Pilbara, WA	2013/6844	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Dampier Marine Services Facility including 300m Wharf and Dredging Works	2009/5108	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Diesel Fuel Bunker Operation	2012/6289	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Dredging of marine sediment to enable construction of eight berths and a turnin	2010/5678	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine Geotechnical Drilling Program	2008/4012	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Millstream 20GL Pipeline, Bungaroo, Borefield Integration	2012/6379	Not Controlled Action (Particular Manner)	Post-Approval
MOF Road Widening and Resurfacing Works	2011/5843	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Nelson Point Dredging	2009/4920	Not Controlled Action (Particular Manner)	Post-Approval
Nickol Bay Quarry Eastern Extension Proposal, Burrup Peninsula, WA	2013/6915	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Onslow Seawater Desalination Plant Marine Geophysical Investigation	2020/8794	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Port Headland Outer Harbour Pre-construction Pilling program	2012/6341	Not Controlled Action (Particular Manner)	Post-Approval
Port of Port Hedland channel marker replacement project, WA	2017/8010	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Port Walcott upgrade, dredging & spoil disposal, & channel realignment	2006/2806	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Realignment of the Great Northern Highway	2010/5793	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Repsol 3d & 2D Marine Seismic Survey	2012/6658	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
The Dampier Heavy Load Out Facility Berth and Swing Basin Expansion	2012/6271	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
upgrade of 3 community recreation sites	2005/2349	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
construction of a new loadout facility and associated laydown area south of the	2002/579	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Mardie Salt Project, Pilbara region, WA	2018/8183	Referral Decision	Completed
Outer Harbour Development and associated marine and terrestial infrastructure	2008/4148	Referral Decision	Completed
Relocation of 2 heritage sites to National Heritage Place	2010/5709	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Reproduction	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Reproduction	Low density
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Migration	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Chelonia mydas Green Turtle [1765]	Resting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration	Known to occur

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Migration	Known to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
River shark		
Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Reproduction	Known to occur
Pristis pristis Largetooth Sawfish [60756]	Foraging	Known to occur
Pristis pristis Largetooth Sawfish [60756]	Reproduction	Known to occur
Pristis zijsron Green Sawfish [68442]	Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]	Reproduction	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Reproduction	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Sternula albifrons sinensis Little Tern [82850]	Reproduction	Known to occur
Sternula nereis Fairy Tern [82949]	Reproduction	Known to occur
Sula leucogaster Brown Booby [1022]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Eubalaena australis Southern Right Whale [40]	Migration	
Eubalaena australis Southern Right Whale [40]	Reproduction	
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

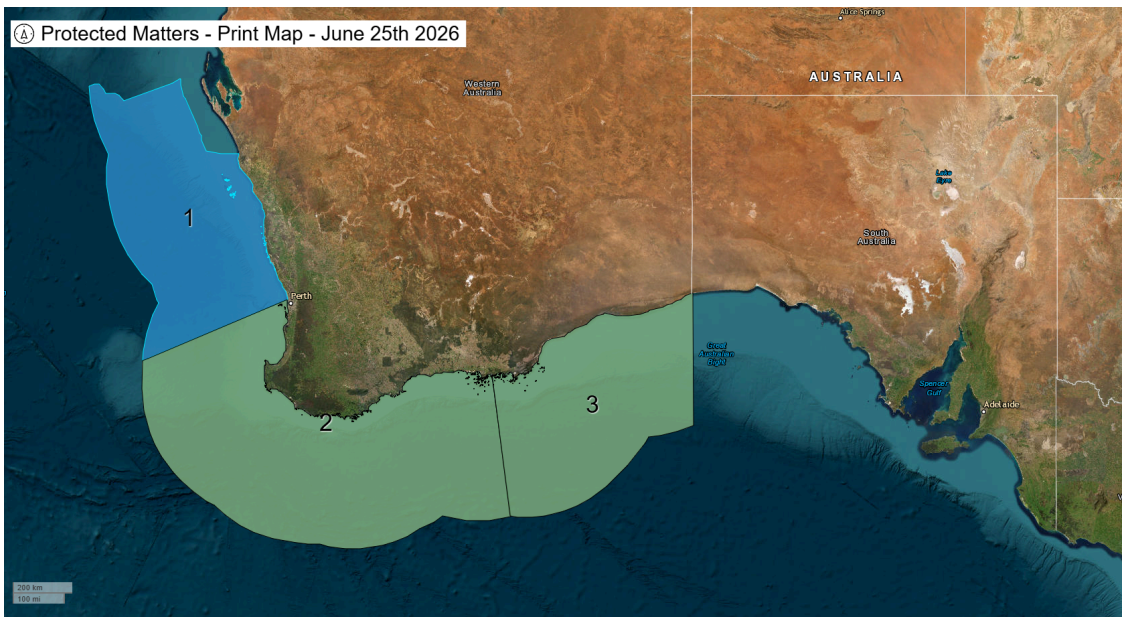


Figure 1: South West Marine Region - North (Part 1)

Report created: 25-Jun-2026

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Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	3
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	5
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	112
Listed Migratory Species:	81

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	20
Commonwealth Heritage Places:	3
Listed Marine Species:	125
Whales and Other Cetaceans:	38
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	48
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	113
Key Ecological Features (Marine):	8
Biologically Important Areas:	23
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
HMAS Sydney II and HSK Kormoran Shipwreck Sites	EXT	Listed place
Batavia Shipwreck Site and Survivor Camps Area 1629 - Houtman Abrolhos	WA	Listed place
Natural		
Lesueur National Park	WA	Listed place

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities	[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area

Community Name	Threatened Category	Presence Text
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris tenuirostris Great Knot [862]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Turnix varius scintillans Painted Button-quail (Houtman Abrolhos) [82451]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Xenus cinereus](#)		
Terek Sandpiper [59300]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Zanda latirostris listed as Calyptorhynchus latirostris](#)		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding likely to occur within area
FISH		
[Hoplostethus atlanticus](#)		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
[Nannatherina balstoni](#)		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat likely to occur within area
INSECT		
[Hesperocolletes douglasi](#)		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
MAMMAL		
[Balaenoptera borealis](#)		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#)		
Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#)		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Bettongia penicillata ogilbyi](#)		
Woylie [66844]	Endangered	Species or species habitat likely to occur within area
[Dasyurus geoffroii](#)		
Chuditch, Western Quoll [330]	Vulnerable	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Translocated population known to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat likely to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area
Androcalva bivillosa Straggling Androcalva [87807]	Critically Endangered	Species or species habitat likely to occur within area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area
Beyeria lepidopetala Small-petalled Beyeria, Short-petalled Beyeria [18362]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia barbarella Small Dragon Orchid, Common Dragon Orchid [68686]	Endangered	Species or species habitat may occur within area
Caladenia bryceana subsp. cracens Northern Dwarf Spider-orchid [64556]	Vulnerable	Species or species habitat likely to occur within area
Caladenia elegans Elegant Spider-orchid [56775]	Endangered	Species or species habitat likely to occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat likely to occur within area
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat likely to occur within area
Chorizema humile Prostrate Flame Pea [32573]	Endangered	Species or species habitat may occur within area
Chorizema varium Limestone Pea [16981]	Endangered	Species or species habitat likely to occur within area
Conostylis dielsii subsp. teres Irwin's Conostylis [3614]	Endangered	Species or species habitat may occur within area
Conostylis micrantha Small-flowered Conostylis [17635]	Endangered	Species or species habitat may occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
Drakaea concolor Kneeling Hammer-orchid [56777]	Vulnerable	Species or species habitat likely to occur within area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area
Drummondita ericoides Morseby Range Drummondita [9193]	Endangered	Species or species habitat likely to occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus cuprea Mallee Box [56773]	Endangered	Species or species habitat likely to occur within area
Grevillea batrachioides Mt Lesueur Grevillea [21735]	Endangered	Species or species habitat may occur within area
Grevillea bracteosa subsp. howatharra [85002]	Critically Endangered	Species or species habitat likely to occur within area
Grevillea humifusa Spreading Grevillea [61182]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat likely to occur within area
Hypocalymma angustifolium subsp. Hutt River (S.Patrick 2982) [85023]	Endangered	Species or species habitat likely to occur within area
Lechenaultia chlorantha Kalbarri Leschenaultia [16763]	Vulnerable	Species or species habitat likely to occur within area
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area
Marianthus paralius [83925]	Endangered	Species or species habitat likely to occur within area
Melaleuca sp. Wanneroo (G.J.Keighery 16705) [89456]	Endangered	Species or species habitat likely to occur within area
Pterostylis sinuata Northampton Midget Greenhood, Western Swan Greenhood [84991]	Endangered	Species or species habitat likely to occur within area
Stachystemon nematophorus Three-flowered Stachystemon [81447]	Vulnerable	Species or species habitat likely to occur within area
Styphelia marginata listed as Leucopogon marginatus Thick-margined Leucopogon [91870]	Endangered	Species or species habitat likely to occur within area
Styphelia obtecta listed as Leucopogon obtectus Hidden Beard-heath [50758]	Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Thelymitra variegata](#) Queen of Sheba [12582]	Critically Endangered	Species or species habitat may occur within area
[Wurmbea tubulosa](#) Long-flowered Nancy [12739]	Endangered	Species or species habitat may occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Ctenotus lancelini](#) Lancelin Island Skink [1482]	Vulnerable	Translocated population known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Egernia stokesii badia](#) Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
[Liopholis pulchra longicauda](#) Jurien Bay Skink, Jurien Bay Rock-skink [83162]	Vulnerable	Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation likely to occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus		
Tope, Flake, Oil Shark, School Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area
SPIDER		
Idiosoma nigrum		
Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		

Scientific Name	Threatened Category	Presence Text
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Congregation or aggregation likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Pristis pristis](#) Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
[Calidris alba](#) Sanderling [875]		Roosting likely to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
[Calidris ruficollis](#) Red-necked Stint [860]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Calidris tenuirostris](#) Great Knot [862]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Charadrius bicinctus](#) Double-banded Plover [895]		Foraging, feeding or related behaviour likely to occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
[Charadrius mongolus](#) Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Gallinago megala](#) Swinhoe's Snipe [864]		Roosting likely to occur within area
[Gallinago stenura](#) Pin-tailed Snipe [841]		Roosting likely to occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
[Limosa limosa](#) Black-tailed Godwit [845]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
[Numenius minutus](#) Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
[Numenius phaeopus](#) Whimbrel [849]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Foraging, feeding or related behaviour likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour likely to occur within area
Tringa totanus Common Redshank, Redshank [835]		Foraging, feeding or related behaviour likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Australian Broadcasting Corporation	
Lot 3 P003065 [AGPR212]	WA
Australian Maritime Safety Authority	
Lot 2 S064031 [AGPR260]	WA
Lot 2 S064031 [AGPR261]	WA
Australian Postal Corporation	
Lot 1722 P167316 [AGPR7252]	WA
Department of Climate Change, Energy, the Environment and Water	
Geraldton Drill Hall Complex [CHL_105658]	WA
HMAS Sydney II and HSK Kormoran Shipwreck Sites [CHL_106062]	EXT
Lancelin Defence Training Area [CHL_105578]	WA
Department of Defence	
ANC TS MARMION - Hillarys [DD_3371]	WA
ANC TS Morrow - Geraldton [DD_0084]	WA
Geraldton Training Depot [DD_0705]	WA
Geraldton Training Depot [AGPR4445]	WA
Geraldton Training Depot [AGPR4444]	WA
Geraldton Training Depot [AGPR4446]	WA
Joondalup Training Depot [DD_1554]	WA
Lancelin Training Area [DD_0085]	WA
Lancelin Training Area [AGPR4486]	WA
Lancelin Training Area [AGPR4487]	WA
WA Offshore Training Area [DD_3034]	WA
Department of Home Affairs	
Lot 536 P044177 [AGPR6133]	WA
Lot 920 P057276 [AGPR4736]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Geraldton Drill Hall Complex	WA	Listed place
HMAS Sydney II and HSK Kormoran Shipwreck Sites	EXT	Listed place
Natural		
Lancelin Defence Training Area	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Larus pacificus Pacific Gull [811]		Breeding likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Foraging, feeding or related behaviour likely to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding likely to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus huttoni Hutton's Shearwater [1025]		Foraging, feeding or related behaviour likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat likely to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Foraging, feeding or related behaviour likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area overfly marine area
Fish		
[Campichthys galei](#) Gale's Pipefish [66191]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Festucalex scalaris](#) Ladder Pipefish [66216]		Species or species habitat may occur within area
[Filicampus tigris](#) Tiger Pipefish [66217]		Species or species habitat may occur within area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area
[Haliichthys taeniophora as Haliichthys taeniophorus](#) Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
[Hippocampus angustus](#) Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
[Hippocampus breviceps](#) Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
[Hippocampus histrix](#) Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Idiotropiscis australe as Acentronura australe Southern Pygmy Pipehorse [74958]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Vanacampus phillipi](#) Port Phillip Pipefish [66284]		Species or species habitat may occur within area
[Vanacampus poecilolaemus](#) Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		
[Aipysurus laevis](#) Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
[Aipysurus pooleorum](#) Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Ephalophis greyae as Ephalophis greyi](#) Mangrove Sea Snake [93738]		Species or species habitat may occur within area
[Hydrophis kingii as Disteira kingii](#) Spectacled Sea Snake [93511]		Species or species habitat may occur within area
[Hydrophis major as Disteira major](#) Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata		
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)

Park Name	Zone & IUCN Categories
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
Two Rocks	Multiple Use Zone (IUCN VI)
Abrolhos	National Park Zone (IUCN II)
Abrolhos	National Park Zone (IUCN II)
Jurien	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
Two Rocks	National Park Zone (IUCN II)
Abrolhos	Special Purpose Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Jurien	Special Purpose Zone (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Beagle Islands	Nature Reserve	WA
Beekeepers	Nature Reserve	WA
Boullanger, Whitlock, Favourite, Tern And Osprey Islands	Nature Reserve	WA
Buller,Whittell & Green Islands	Nature Reserve	WA
Buller, Whittell And Green Islands	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Cervantes Islands	Nature Reserve	WA
Dongara	Nature Reserve	WA
Drovers Cave	National Park	WA
Escape Island	Nature Reserve	WA
Essex Rocks	Nature Reserve	WA
Fisherman Islands	Nature Reserve	WA
Houtman Abrolhos Islands	National Park	WA
Jurien Bay	Marine Park	WA
Kalbarri	National Park	WA
Lancelin And Edwards Islands	Nature Reserve	WA
Lesueur	National Park	WA
Lipfert, Milligan, Etc Islands	Nature Reserve	WA
Marmion	Marine Park	WA
Nambung	National Park	WA
Neerabup	National Park	WA
Neerabup	Nature Reserve	WA
Nilgen	Nature Reserve	WA
Nilligarri	Nature Reserve	WA
Oakabella	Nature Reserve	WA
Outer Rocks	Nature Reserve	WA
Port Gregory	NRS Addition - Gazettal in Progress	WA
Ronsard Rocks	Nature Reserve	WA
Rottnest Island	State Reserve	WA
Rottnest Island	State Reserve	WA
Sandland Island	Nature Reserve	WA
Southern Beekeepers	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA11883	5(1)(h) Reserve	WA
Unnamed WA33287	Nature Reserve	WA
Unnamed WA33799	Nature Reserve	WA
Unnamed WA34039	5(1)(h) Reserve	WA
Unnamed WA42030	5(1)(g) Reserve	WA
Unnamed WA44682	5(1)(h) Reserve	WA
Unnamed WA46982	5(1)(h) Reserve	WA
Unnamed WA46983	5(1)(h) Reserve	WA
Unnamed WA46984	5(1)(h) Reserve	WA
Unnamed WA48205	5(1)(h) Reserve	WA
Unnamed WA48717	Conservation Park	WA
Unnamed WA48858	Nature Reserve	WA
Unnamed WA49994	Conservation Park	WA
Utcha Well	Nature Reserve	WA
Wanagarren	Nature Reserve	WA
Wedge Island	Nature Reserve	WA
Yanchep	National Park	WA

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Alkimos Seawater Desalination	2019/8453		Completed
Carabooda Quarry	2023/09554		Completed
Eradication of the European House Borer, Perth metropolitan area, WA	2009/5027		Completed
Gonneville Nickel-Copper-Platinum Group Element Mine Development Project	2024/09839		Assessment
Jurien Bay Borefield Expansion Bore 29/01	2024/10095		Referral Decision

Title of referral	Reference	Referral Outcome	Assessment Status
Jurien East Road Upgrade, 3 km NNE Jurien Bay, WA	2020/8740		Post-Approval
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Midwest Offshore Wind Farm	2022/09264		Assessment
Murchison Hydrogen Renewables Project	2022/09217		Assessment
Samphire Offshore Wind Farm	2022/09306		Assessment
SMAP telecommunications submarine cable installation	2024/09989		Completed
Urban Development of Part Lot 801 Marmion Avenue, Eglinton	2024/09881		Completed
Yanchep Rail Extension, WA	2018/8262		Post-Approval
Yogi Magnetite Project, 225km east, northeast of Geraldton, WA	2017/8124		Post-Approval
Controlled action			
Airborne sonar trials	2001/540	Controlled Action	Completed
Alkimos city centre and central development, WA	2015/7561	Controlled Action	Post-Approval
Alkimos Coastal Node	2020/8861	Controlled Action	Further Information Request
Butler North District Open Space playing fields development, Wanneroo, WA	2017/8053	Controlled Action	Post-Approval
Catalina Residential Development	2010/5785	Controlled Action	Post-Approval
Coburn Mineral Sand Project	2003/1221	Controlled Action	Post-Approval
construction and operation of a unmanned platform at the Cliff Head oil field, a	2003/1300	Controlled Action	Post-Approval
Construction of the Oakajee Port and Rail Project	2011/5797	Controlled Action	Post-Approval
development of land based tourist facilities on Long Island	2006/2792	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Eglinton/South Yanchep Residential Development	2011/6021	Controlled Action	Post-Approval
Eglinton Estates - Clearing of native vegetation from Lot 1007 & part Lot 1008	2010/5777	Controlled Action	Post-Approval
Excavate sand and limestone resources	2010/5621	Controlled Action	Completed
Hematite (iron ore) Mine and Beneficiation Plant	2001/542	Controlled Action	Completed
Jindee Residential Development	2012/6631	Controlled Action	Post-Approval
Karara Magnetite Project	2006/3017	Controlled Action	Post-Approval
Mitchell Freeway Extension and Wanneroo Road Upgrade, WA	2018/8367	Controlled Action	Post-Approval
Mitchell Freeway Extension between Burns Beach Rd and Hester Av, Neerabup, WA	2013/7091	Controlled Action	Post-Approval
Mount Gibson Iron Ore Pellet Project	2000/95	Controlled Action	Completed
Nava-1 Cable System	2001/510	Controlled Action	Completed
Neerabup Industrial Estate, Lot 701 Flynn Drive Neerabup WA	2012/6424	Controlled Action	Post-Approval
Oakajee Rail Development	2010/5500	Controlled Action	Post-Approval
Ocean Reef Marina Development	2009/4937	Controlled Action	Completed
open cut mine & assoc infrastructure	2005/2381	Controlled Action	Post-Approval
Port Enhancement Project	2001/266	Controlled Action	Post-Approval
Proposed Urban Development of Lots 1005 & 1006	2008/4638	Controlled Action	Post-Approval
Residential development,Lot 609, Yanchep Beach Road, Yanchep, WA	2014/7146	Controlled Action	Post-Approval
Residential development Lot 1004 Alkimos WA	2011/5902	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Shenton Park Subdivision	2004/1479	Controlled Action	Completed
Tourism Facility and Associated Infrastructure	2005/2038	Controlled Action	Post-Approval
Urban and Residential Development at Lot 9 Brighton	2011/6137	Controlled Action	Post-Approval
Urban development in accordance with the Local Structure Plan	2008/4601	Controlled Action	Post-Approval
Urban Residential Development at Lot 9049 Marmoin Avenue	2009/5155	Controlled Action	Post-Approval
Vegetation Clearing, Wannaroo Rd and Nowergup Rd	2011/5955	Controlled Action	Completed
Not controlled action			
Alkimos seawater desalination plant, offshore investigations, WA	2018/8224	Not Controlled Action	Completed
Amberton West urban development - Part lot 9005 Eglington WA	2013/7068	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Butler Railway Extension Project - Nowergup Depot Eastern Alignment	2011/5989	Not Controlled Action	Completed
Cliff Head 6 appraisal well	2004/1702	Not Controlled Action	Completed
Cliff Head Appraisal Wells	2003/938	Not Controlled Action	Completed
Construction of several passing lanes between Lancelin and Jurien Bay, WA	2015/7509	Not Controlled Action	Completed
Container Deposit Scheme Project	2019/8517	Not Controlled Action	Completed
Development of new Alkimos Wastwater Treatment Plant	2007/3259	Not Controlled Action	Completed
Drilling between Kalbarri and Cliff Head	2005/2185	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Establishment of a 12.7 ha Gypsum Mine	2007/3398	Not Controlled Action	Completed
Exploration drilling program located in exploration permits WA-286-P and TP/15	2002/676	Not Controlled Action	Completed
Extension of 7.5km of the Joondalup Line electrified passenger railway from Cla	2010/5632	Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Glenfield Beach Project	2012/6359	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Indian Ocean Drive Passing Lane and Widening 52-258 SLK	2017/7884	Not Controlled Action	Completed
Indian Ocean Drive Widening, Gingin Shire, WA	2018/8346	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Lancelin Caravan Park Project, Hopkins Dve & Casserley Way, Lancelin	2015/7546	Not Controlled Action	Completed
Maintenance Dredging in the Geraldton Port Outer Channel	2010/5488	Not Controlled Action	Completed
Nowergup Strawberry Farm McLennan Drive, Nowergup, WA	2017/8042	Not Controlled Action	Completed
Ocean Reef Marina Development, City of Joondalup, WA	2014/7237	Not Controlled Action	Completed
Oman Australia Cable Installation, WA	2021/8922	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Quinns Main sewer extension, Clarkson - Neerabup, WA	2018/8215	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Residential development, Lots 9010 and 9031, Yanchep Beach Rd, Yanchep	2016/7642	Not Controlled Action	Completed
Residential Development Eglinton West, Lot 5000 & part Lot 5001, Pipidinny Road, Eglinton	2014/7137	Not Controlled Action	Completed
residential subdivision	2005/1965	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Scientific Sonar Trial	2002/680	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
WA-286-P Exploration Drilling Programme	2007/3863	Not Controlled Action	Completed
Yellowfin Tuna Aquaculture Trial	2003/1115	Not Controlled Action	Completed
Yngling-1 exploration well for WA-368-P	2007/3523	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D Marine Seismic Survey in Permit Area WA-337-P	2003/1158	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2007/3800	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Australian Square Kilometre Array Pathfinder telescope &	2009/4891	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
infrastructure		(Particular Manner)	
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
develop and operate a new deepwater port	2010/5760	Not Controlled Action (Particular Manner)	Post-Approval
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Marine Seismic Survey for oil and gas in Commonwealth waters off the WA coast.	2004/1802	Not Controlled Action (Particular Manner)	Post-Approval
Marine Seismic Survey in Permit WA-481P	2012/6626	Not Controlled Action (Particular Manner)	Post-Approval
Nexus Energy Seismic survey WA	2006/2569	Not Controlled Action (Particular Manner)	Post-Approval
North Perth Marine Survey	2011/6067	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
search for HMAS Sydney	2006/3071	Not Controlled Action (Particular Manner)	Post-Approval
Study of behavioural responses of Austn Humpback Whales to seismic surveys, offshore Dongara, WA	2013/6927	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic survey	2007/3729	Referral Decision	Completed
3D Seismic Survey	2012/6245	Referral Decision	Completed
Exploration Drilling 2014/2015 WA-481-P	2013/7043	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed
Proposed exploration drilling activities, Abrolhos Commonwealth Marine Reserve	2013/6949	Referral Decision	Completed
Residential Subdivision of 60ha, Swan Location 2424	2004/1928	Referral Decision	Completed
Sonar Trials and Acoustic Trials	2001/538	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 90-120m depth	South-west
Commonwealth marine environment surrounding the Houtman Abrolhos Islands	South-west
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west

Name	Region
Naturaliste Plateau	South-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Wallaby Saddle	North-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Seabirds		
Anous stolidus Common Noddy [825]	Foraging	Likely to occur
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Foraging	Known to occur
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging	Likely to occur
Hydroprogne caspia Caspian Tern [808]	Foraging	Known to occur
Larus pacificus Pacific Gull [811]	Foraging	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging	Likely to occur
Onychoprion fuscatus Sooty Tern [90682]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging	Known to occur
Puffinus assimilis Little Shearwater [59363]	Foraging	Likely to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur
Sternula nereis Fairy Tern [82949]	Foraging	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus Blue and Pygmy Blue Whale [36]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Eubalaena australis Southern Right Whale [40]	Migration	
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Physeter macrocephalus Sperm Whale [59]	Foraging	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 25-Jun-2026

[Summary](#)
[Details](#)
- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgements](#)

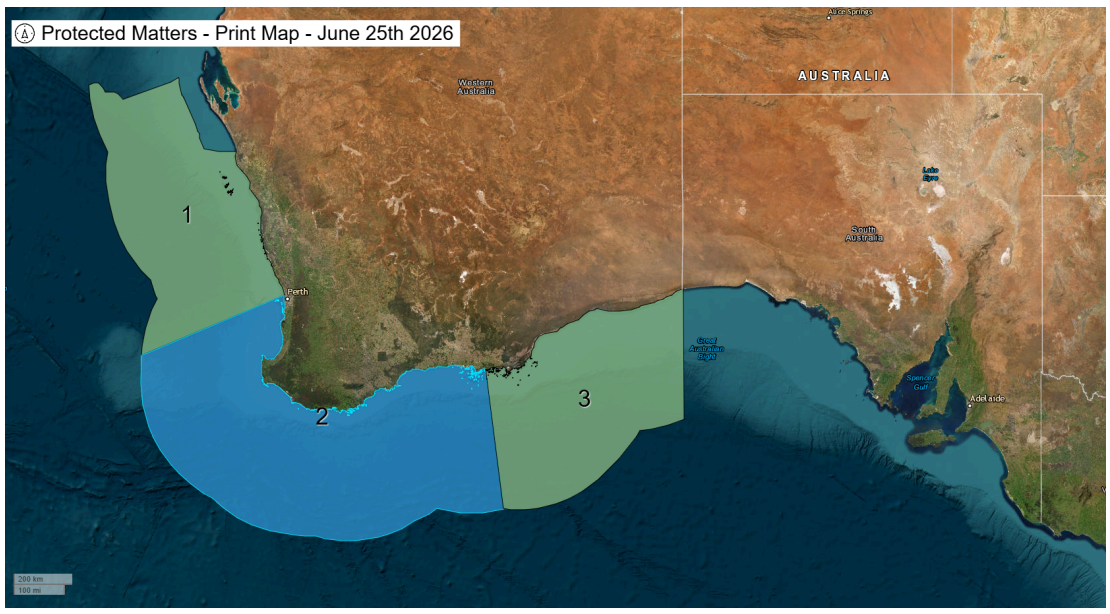


Figure 1: South West Marine Region - Central (Part 2)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	3
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	14
Listed Threatened Species:	176
Listed Migratory Species:	86

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	66
Commonwealth Heritage Places:	5
Listed Marine Species:	124
Whales and Other Cetaceans:	39
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	29
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	158
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	303
Key Ecological Features (Marine):	11
Biologically Important Areas:	27
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
Australian Convict Sites (Fremantle Prison)	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
Fremantle Prison (former)	WA	Listed place
Indigenous		
Cheetup Rock Shelter	WA	Listed place
Natural		
Fitzgerald River National Park	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Becher point wetlands	Within Ramsar site
Forrestdale and thomsons lakes	Within Ramsar site
Lake gore	Within Ramsar site
Lake warden system	Within Ramsar site
Peel-yalgorup system	Within Ramsar site
Vasse-wonnerup system	Within Ramsar site

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Aquatic Root Mat Community 1 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Aquatic Root Mat Community 3 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Aquatic Root Mat Community 4 in Caves of the Leeuwin Naturaliste Ridge	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area
Empodisma peatlands of southwestern Australia	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Scott River Ironstone Association	Endangered	Community likely to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond)	Endangered	Community known to occur within area
Thrombolite (microbialite) Community of a Coastal Brackish Lake (Lake Clifton)	Critically Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Atrichornis clamosus Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Dasyornis longirostris Western Bristlebird [515]	Endangered	Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Psophodes nigrogularis nigrogularis Western Heath Whipbird [64449]	Endangered	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area
Zanda baudinii listed as Calyptorhynchus baudinii		
Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo [87736]	Endangered	Breeding likely to occur within area
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding likely to occur within area
CRUSTACEAN		
Cherax tenuimanus		
Hairy Marron, Margaret River Hairy Marron, Margaret River Marron [78931]	Critically Endangered	Species or species habitat may occur within area
Engaewa pseudoreducta		
Margaret River Burrowing Crayfish [82674]	Critically Endangered	Species or species habitat may occur within area
Engaewa reducta		
Dunsborough Burrowing Crayfish [82675]	Critically Endangered	Species or species habitat likely to occur within area
Engaewa walpolea		
Walpole Burrowing Crayfish [82676]	Endangered	Species or species habitat likely to occur within area
FISH		
Galaxias truttaceus (Western Australian population)		
Western Trout Minnow [89857]	Endangered	Species or species habitat likely to occur within area
Galaxiella munda		
Western Dwarf Galaxias, Western Mud Minnow [79240]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Galaxiella nigrostriata		
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat likely to occur within area
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Nannatherina balstoni		
Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat likely to occur within area
Nannoperca pygmaea		
Little Pygmy Perch [88315]	Endangered	Species or species habitat likely to occur within area
FROG		
Spicospina flammocaerulea		
Sunset Frog [64782]	Vulnerable	Species or species habitat likely to occur within area
INSECT		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
Trioza barrettae		
Banksia brownii plant louse [87805]	Endangered	Species or species habitat likely to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat likely to occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding likely to occur within area
Myrmecobius fasciatus Numbat [294]	Endangered	Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Translocated population known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis Black-flanked Rock-wallaby, Mooroorong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat may occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Translocated population known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Breeding likely to occur within area
Pseudomys shortridgei Heath Mouse, Dayang, Heath Rat [77]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat likely to occur within area
OTHER		
Westralunio carteri Carter's Freshwater Mussel, Ambiguus Mussel [86266]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Adenanthos dobagii Fitzgerald Woollybush [21253]	Endangered	Species or species habitat likely to occur within area
Adenanthos ellipticus Oval-leaf Adenanthos [4570]	Vulnerable	Species or species habitat likely to occur within area
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Andersonia pinaster Two Peoples Bay Andersonia [67444]	Vulnerable	Species or species habitat likely to occur within area
Anigozanthos bicolor subsp. minor Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
Austrostipa bronweniae listed as Austrostipa bronwenae [92773]	Endangered	Species or species habitat likely to occur within area
Austrostipa jacobsiana [87809]	Critically Endangered	Species or species habitat likely to occur within area
Banksia anatona Cactus Dryandra [82758]	Critically Endangered	Species or species habitat may occur within area
Banksia brownii Brown's Banksia, Feather-leaved Banksia [8277]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Banksia goodii Good's Banksia [16727]	Vulnerable	Species or species habitat likely to occur within area
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area
Banksia nivea subsp. uliginosa Swamp Honeypot [82766]	Endangered	Species or species habitat likely to occur within area
Banksia pseudoplumosa False Plumed-Banksia [82760]	Endangered	Species or species habitat likely to occur within area
Banksia squarrosa subsp. argillacea Whicher Range Dryandra [82769]	Vulnerable	Species or species habitat likely to occur within area
Banksia verticillata Granite Banksia, Albany Banksia, River Banksia [8333]	Vulnerable	Species or species habitat likely to occur within area
Boronia clavata Bremer Boronia [5538]	Endangered	Species or species habitat likely to occur within area
Boronia exilis Scott River Boronia [64844]	Endangered	Species or species habitat likely to occur within area
Brachyscias verecundus Ironstone Brachyscias [81321]	Critically Endangered	Species or species habitat may occur within area
Caladenia busselliana Bussell's Spider-orchid [24369]	Endangered	Species or species habitat likely to occur within area
Caladenia caesarea subsp. maritima Cape Spider-orchid [64856]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Caladenia excelsa		
Giant Spider-orchid [56717]	Endangered	Species or species habitat likely to occur within area
Caladenia granitora		
[65292]	Endangered	Species or species habitat likely to occur within area
Caladenia harringtoniae		
Harrington's Spider-orchid, Pink Spider-orchid [56786]	Vulnerable	Species or species habitat likely to occur within area
Caladenia hoffmanii		
Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area
Caladenia lodgeana		
Lodge's Spider-orchid [68664]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia procera		
Carbunup King Spider Orchid [68679]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia viridescens		
Dunsborough Spider-orchid [56776]	Endangered	Species or species habitat likely to occur within area
Calectasia cyanea		
Blue Tinsel Lily [7669]	Critically Endangered	Species or species habitat likely to occur within area
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6)		
Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area
Chamelaucium roycei listed as Chamelaucium sp. S coastal plain (R.D.Royce 4872)		
Royce's Waxflower [56751]	Vulnerable (listed as Chamelaucium sp. S coastal plain	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chordifex abortivus Manypeaks Rush [64868]	Endangered	Species or species habitat likely to occur within area
Commersonia apella Many-flowered Commersonia [86877]	Critically Endangered	Species or species habitat likely to occur within area
Conospermum quadripetalum [65312]	Critically Endangered	Species or species habitat likely to occur within area
Conostylis misera Grass Conostylis [21320]	Endangered	Species or species habitat likely to occur within area
Coopernookia georgei Mauve Coopernookia [21218]	Endangered	Species or species habitat likely to occur within area
Darwinia ferricola Scott River Darwinia [56706]	Endangered	Species or species habitat likely to occur within area
Daviesia obovata Paddle-leaf Daviesia [17311]	Endangered	Species or species habitat likely to occur within area
Daviesia ovata Broad-leaf Daviesia [21193]	Critically Endangered	Species or species habitat likely to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat may occur within area
Eucalyptus burdettiana Burdett Gum [13505]	Endangered	Species or species habitat likely to occur within area
Eucalyptus coronata Crowned Mallee [2308]	Vulnerable	Species or species habitat likely to occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x phylacis Meelup Mallee [87817]	Endangered	Species or species habitat likely to occur within area
Gastrolobium argyrotrichum Metricup Pea [89145]	Critically Endangered	Species or species habitat likely to occur within area
Gastrolobium papilio Butterfly-leaved Gastrolobium [78415]	Endangered	Species or species habitat may occur within area
Grevillea brachystylis subsp. australis [55525]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Grevillea elongata Ironstone Grevillea [64578]	Vulnerable	Species or species habitat may occur within area
Grevillea infundibularis Fan-leaf Grevillea [5772]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Kennedia glabrata Northcliffe Kennedia [16452]	Vulnerable	Species or species habitat likely to occur within area
Kennedia lateritia Augusta Kennedia [45985]	Endangered	Species or species habitat likely to occur within area
Kunzea similis subsp. similis [84068]	Critically Endangered	Species or species habitat likely to occur within area
Lambertia echinata subsp. echinata Prickly Honeysuckle [56729]	Endangered	Species or species habitat likely to occur within area
Lambertia echinata subsp. occidentalis Western Prickly Honeysuckle [64528]	Endangered	Species or species habitat may occur within area
Lambertia orbifolia Roundleaf Honeysuckle [15725]	Endangered	Species or species habitat likely to occur within area
Leptomeria dielsiana Diels' Currant Bush [5146]	Vulnerable	Species or species habitat likely to occur within area
Microtis globula South-Coast Mignonette Orchid [6780]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Morelotia australiensis listed as Tetraria australiensis		
Southern Tetraria [92784]	Vulnerable	Species or species habitat likely to occur within area
Myoporum cordifolium		
Jerramungup Myoporum [24223]	Vulnerable	Species or species habitat likely to occur within area
Petrophile latericola		
Laterite Petrophile [64532]	Endangered	Species or species habitat likely to occur within area
Reedia spathacea		
Reedia [2995]	Critically Endangered	Species or species habitat likely to occur within area
Ricinocarpos trichophorus		
Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
Scaevola macrophylla		
Large-flowered Scaevola [11806]	Critically Endangered	Species or species habitat may occur within area
Sphenotoma drummondii		
Mountain Paper-heath [21160]	Endangered	Species or species habitat likely to occur within area
Stylidium galioides		
Yellow Mountain Triggerplant [4666]	Vulnerable	Species or species habitat likely to occur within area
Synaphea sp. Fairbridge Farm (D.Papenfus 696)		
Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area
Synaphea sp. Serpentine (G.R.Brand 103)		
[86879]	Critically Endangered	Species or species habitat may occur within area
Synaphea stenoloba		
Dwellingup Synaphea [66311]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thelymitra variegata Queen of Sheba [12582]	Critically Endangered	Species or species habitat likely to occur within area
Verticordia apecta Hay River Featherflower, Scruffy Verticordia [65545]	Critically Endangered	Species or species habitat may occur within area
Verticordia crebra [55678]	Vulnerable	Species or species habitat likely to occur within area
Verticordia densiflora var. pedunculata Long-stalked Featherflower [55689]	Endangered	Species or species habitat may occur within area
Verticordia fimbrilepis subsp. australis Southern Shy Featherflower [24630]	Vulnerable	Species or species habitat likely to occur within area
Verticordia helichrysantha Coast Featherflower [8204]	Vulnerable	Species or species habitat likely to occur within area
Verticordia pityrhops Little Pine Verticordia, Pine-like Featherflower [55798]	Endangered	Species or species habitat likely to occur within area
Verticordia plumosa var. ananeotes Tufted Plumed Featherflower [23871]	Endangered	Species or species habitat may occur within area
Verticordia plumosa var. vassensis Vasse Featherflower [55804]	Endangered	Species or species habitat likely to occur within area
Wurmbea calcicola Naturaliste Nancy [64691]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus Tope, Flake, Oil Shark, School Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area
SPIDER		
Bertmainius tingle Tingle Pygmy Trapdoor Spider [89126]	Endangered	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
[Anous stolidus](#) Common Noddy [825]		Species or species habitat likely to occur within area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
[Ardenna carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
[Ardenna grisea](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
[Ardenna pacifica](#) Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
[Ardenna tenuirostris](#) Short-tailed Shearwater [82652]		Breeding likely to occur within area
[Diomedea amsterdamensis](#) Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
[Diomedea antipodensis](#) Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Diomedea dabbenena](#) Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
[Diomedea epomophora](#) Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche chrysostoma		
Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata		
Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Congregation or aggregation likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting likely to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Roosting likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa glareola Wood Sandpiper [829]		Roosting likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area
Tringa totanus Common Redshank, Redshank [835]		Roosting likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Australian Broadcasting Corporation	
BUNBUT 00320 [AGPR210]	WA
Lot 31 P027286 [AGPR208]	WA
Australian Postal Corporation	
Lot 0 S020494 [AGPR7372]	WA
Lot 10 D017395 [AGPR7218]	WA
Lot 17 D070540 [AGPR7188]	WA
Lot 1 D084946 [AGPR7186]	WA
Lot 2 D091270 [AGPR6994]	WA
Lot 30 D067227 [AGPR7256]	WA
Lot 4 D072395 [AGPR7388]	WA
Lot 51 D092398 [AGPR7204]	WA
Bureau of Meteorology	

Commonwealth Land Name	State
Lot 50 D034438 [AGPR322]	WA
Commonwealth of Australia	
Lot B 42 P144904 [AGPR6654]	WA
Lot B 44 P144904 [AGPR6655]	WA
Department of Climate Change, Energy, the Environment and Water	
Artillery Barracks [CHL_105332]	WA
Cape Leeuwin Lighthouse [CHL_105416]	WA
Cliff Point Historic Site [CHL_105273]	WA
Garden Island [CHL_105274]	WA
J Gun Battery [CHL_105272]	WA
Department of Defence	
AAC 511 Army Cadet Unit - Busselton [DD_3353]	WA
AAFC 705 Squadron - Albany [DD_0950]	WA
AAFC 707 Squadron - Mandurah [DD_3378]	WA
Albany AIRTC Depot [AGPR4282]	WA
Albany AIRTC Depot [AGPR4283]	WA
Albany Training Depot [DD_0670]	WA
AMC Henderson Common User Facility [DD_3219]	WA
ANC TS KYBRA - Esperance [DD_3221]	WA
ANC TS VANCOUVER - Albany [DD_0078]	WA
ANZAC SPO - 85 Chalgrove Ave Rockingham [DD_3166]	WA
Artillery Barracks - Fremantle [DD_0704]	WA
Bunbury Training Depot [DD_0681]	WA
Campbell Barracks [AGPR4473]	WA
Campbell Barracks [AGPR4478]	WA
Campbell Barracks [AGPR4477]	WA
Campbell Barracks [AGPR4481]	WA
Campbell Barracks [AGPR4480]	WA

Commonwealth Land Name	State
Campbell Barracks [AGPR4479]	WA
Campbell Barracks [AGPR4384]	WA
Campbell Barracks - Swanbourne [DD_0767]	WA
COCKBL 00696 [AGPR4395]	WA
Coolilup Rifle Range [DD_0689]	WA
DMFS - 23 Chalgrove Ave - Rockingham [DD_0090]	WA
Fremantle Harbour Dockyard [DD_0175]	WA
HMAS Stirling [AGPR4442]	WA
HMAS Stirling [DD_0089]	WA
HMAS Stirling [AGPR4443]	WA
HMAS Stirling [AGPR4440]	WA
HMAS Stirling [AGPR4441]	WA
Lot 1 Plan D065920 [AGPR4438]	WA
Lot 2196 P176417 [AGPR4469]	WA
Lot 3055 Plan P189811 [AGPR4468]	WA
Lot 50 D095534 [AGPR4470]	WA
Lot 601 P065368 [AGPR4439]	WA
Lot 70 D079287 [AGPR4396]	WA
Navy Capability Centre - Henderson [DD_1030]	WA
Submarine Escape and Rescue Sys Facility [DD_1237]	WA
Swanbourne Rifle Range [AGPR4476]	WA
Swanbourne Rifle Range [AGPR4483]	WA
Swanbourne Rifle Range [AGPR4482]	WA
Swanbourne Rifle Ranges [DD_0768]	WA
WA Offshore Training Area [DD_3034]	WA
Department of Home Affairs	
Lot 167 P050251 [AGPR6101]	WA

Commonwealth Land Name	State
Lot 324 P013885 [AGPR6134]	WA
Lot 359 P019014 [AGPR6135]	WA
Lot 62 D056867 [AGPR6132]	WA
Lot 669 P055175 [AGPR4737]	WA
Royal Australian Navy Central Canteens Board (Royal Australian Navy Central Canteens Fund)	
Lot 5 D019592 [AGPR5813]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Artillery Barracks	WA	Listed place
Cape Leeuwin Lighthouse	WA	Listed place
Cliff Point Historic Site	WA	Listed place
J Gun Battery	WA	Listed place
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Roosting likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Roosting likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calidris pugnax as Philomachus pugnax Ruff [91256]		Roosting likely to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting likely to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting likely to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding likely to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Roosting likely to occur within area overfly marine area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius ruficapillus Red-capped Plover [881]		Roosting likely to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Eudyptula minor Little Penguin [1085]		Breeding likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting likely to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Larus dominicanus Kelp Gull [809]		Breeding likely to occur within area
Larus pacificus Pacific Gull [811]		Breeding likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting likely to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phalaropus lobatus Red-necked Phalarope [838]		Roosting likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting likely to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat likely to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa glareola Wood Sandpiper [829]		Roosting likely to occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting likely to occur within area overfly marine area
Tringa totanus Common Redshank, Redshank [835]		Roosting likely to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting likely to occur within area overfly marine area
Fish		
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Idiotropiscis australe as Acentronura australe Southern Pygmy Pipehorse [74958]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		

Scientific Name	Threatened Category	Presence Text
[Arctocephalus forsteri](#)		
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding likely to occur within area
[Neophoca cinerea](#)		
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		
[Aipysurus pooleorum](#)		
Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
[Caretta caretta](#)		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#)		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
[Dermochelys coriacea](#)		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Hydrophis kingii as Disteira kingii](#)		
Spectacled Sea Snake [93511]		Species or species habitat may occur within area
[Hydrophis platura as Pelamis platurus](#)		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
[Natator depressus](#)		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
[Balaenoptera acutorostrata](#)		
Minke Whale [33]		Species or species habitat may occur within area
[Balaenoptera bonaerensis](#)		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Berardius arnuxii](#) Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Geographe	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
Perth Canyon	Habitat Protection Zone (IUCN IV)
South-west Corner	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
Perth Canyon	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	Multiple Use Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Geographe	National Park Zone (IUCN II)

Park Name	Zone & IUCN Categories
Perth Canyon	National Park Zone (IUCN II)
Perth Canyon	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Bremer	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Geographe	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)
South-west Corner	Special Purpose Zone (Mining Exclusion) (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Arpenteur	Nature Reserve	WA
Bald Island	Nature Reserve	WA
Basil Road	Nature Reserve	WA
Bold Park	Botanic Gardens	WA
Boorara-Gardner	National Park	WA

Protected Area Name	Reserve Type	State
Breaksea Island	Nature Reserve	WA
Broadwater	Nature Reserve	WA
Cape Le Grand	National Park	WA
Carnac Island	Nature Reserve	WA
Chatham Island	Nature Reserve	WA
Cheyne Island	Nature Reserve	WA
Creery Island	Nature Reserve	WA
D'Entrecasteaux	National Park	WA
Doubtful Islands	Nature Reserve	WA
Eclipse Island	Nature Reserve	WA
Esperance 827 and Part 373 & 826	NRS Addition - Gazettal in Progress	WA
Fitzgerald River	National Park	WA
Flinders Bay	Nature Reserve	WA
Gingilup Swamps	Nature Reserve	WA
Glasse Island	Nature Reserve	WA
Greater Hawke	National Park	WA
Green Island	Nature Reserve	WA
Gull Rock	National Park	WA
Hamelin Island	Nature Reserve	WA
Harry Waring Marsupial Reserve	Nature Reserve	WA
Henderson	Conservation Park	WA
Investigator Island	Nature Reserve	WA
Jerdacuttup Lakes	Nature Reserve	WA
Kalgulup	Conservation Park	WA
Kordabup	Nature Reserve	WA
Lake Shaster	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Lake Warden	Nature Reserve	WA
Leeuwin-Naturaliste	National Park	WA
Len Howard	Conservation Park	WA
Leschenault Peninsula	Conservation Park	WA
Locke	Nature Reserve	WA
Marmion	Marine Park	WA
Mehniup	Nature Reserve	WA
Michaelmas Island	Nature Reserve	WA
Mistaken Island	Nature Reserve	WA
Mount Frankland South	National Park	WA
Mount Manypeaks	Nature Reserve	WA
Mount Mason	Nature Reserve	WA
Mount Shadforth	Nature Reserve	WA
Mullet Lake	Nature Reserve	WA
Ngari Capes	Marine Park	WA
NTWA Bushland covenant (0003)	Conservation Covenant	WA
NTWA Bushland covenant (0004)	Conservation Covenant	WA
NTWA Bushland covenant (0005)	Conservation Covenant	WA
NTWA Bushland covenant (0013)	Conservation Covenant	WA
NTWA Bushland covenant (0015A)	Conservation Covenant	WA
NTWA Bushland covenant (0015B)	Conservation Covenant	WA
NTWA Bushland covenant (0017)	Conservation Covenant	WA
NTWA Bushland covenant (0044A)	Conservation Covenant	WA
NTWA Bushland covenant (0044B)	Conservation Covenant	WA
NTWA Bushland covenant (0044C)	Conservation Covenant	WA
NTWA Bushland covenant (0072A)	Conservation Covenant	WA
NTWA Bushland covenant (0072B)	Conservation Covenant	WA

Protected Area Name	Reserve Type	State
NTWA Bushland covenant (0085A)	Conservation Covenant	WA
NTWA Bushland covenant (0085B)	Conservation Covenant	WA
NTWA Bushland covenant (0090)	Conservation Covenant	WA
NTWA Bushland covenant (0095)	Conservation Covenant	WA
NTWA Bushland covenant (0102)	Conservation Covenant	WA
NTWA Bushland covenant (0137)	Conservation Covenant	WA
NTWA Bushland covenant (0144)	Conservation Covenant	WA
NTWA Bushland covenant (0164)	Conservation Covenant	WA
NTWA Bushland covenant (0173)	Conservation Covenant	WA
NTWA Bushland covenant (0178)	Conservation Covenant	WA
NTWA Bushland covenant (0190)	Conservation Covenant	WA
Owingup	Nature Reserve	WA
Penguin Island	Conservation Park	WA
Point Peron	Conservation Park	WA
Point Peron Reserve	5(1)(h) Reserve	WA
Port Kennedy Scientific Park	Nature Reserve	WA
Quagering	Nature Reserve	WA
Quarram	Nature Reserve	WA
Recherche Archipelago	Nature Reserve	WA
Rottnest Island	State Reserve	WA
Rottnest Island	State Reserve	WA
Rudyard Beach	Nature Reserve	WA
Sabina	Nature Reserve	WA
Scott	National Park	WA
Seal Island (WA25645)	Nature Reserve	WA
Seal Island (WA32199)	Nature Reserve	WA
Shannon	National Park	WA

Protected Area Name	Reserve Type	State
Shark Lake	Nature Reserve	WA
Shelter Island	Nature Reserve	WA
Shoalwater Bay Islands	Nature Reserve	WA
Shoalwater Bay Islands	Nature Reserve	WA
Shoalwater Islands	Marine Park	WA
St Alouarn Island	Nature Reserve	WA
Stockdill Road	Nature Reserve	WA
Stokes	National Park	WA
Sugar Loaf Rock	Nature Reserve	WA
Swan River	Management Area	WA
Tennessee North	Nature Reserve	WA
Thomsons Lake	Nature Reserve	WA
Torndirrup	National Park	WA
Tuart Forest	National Park	WA
Two Peoples Bay	Nature Reserve	WA
Unnamed WA01086	5(1)(h) Reserve	WA
Unnamed WA04182	Nature Reserve	WA
Unnamed WA11962	5(1)(h) Reserve	WA
Unnamed WA15185	Nature Reserve	WA
Unnamed WA24309	5(1)(h) Reserve	WA
Unnamed WA24511	Nature Reserve	WA
Unnamed WA25836	Nature Reserve	WA
Unnamed WA26620	Nature Reserve	WA
Unnamed WA26885	Nature Reserve	WA
Unnamed WA27888	Nature Reserve	WA
Unnamed WA29777	Nature Reserve	WA
Unnamed WA31468	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA32259	Nature Reserve	WA
Unnamed WA32419	Nature Reserve	WA
Unnamed WA32478	5(1)(h) Reserve	WA
Unnamed WA32601	5(1)(h) Reserve	WA
Unnamed WA33308	5(1)(h) Reserve	WA
Unnamed WA40564	Nature Reserve	WA
Unnamed WA41102	5(1)(h) Reserve	WA
Unnamed WA41568	Nature Reserve	WA
Unnamed WA41597	Nature Reserve	WA
Unnamed WA42379	5(1)(h) Reserve	WA
Unnamed WA42469	Nature Reserve	WA
Unnamed WA42879	Nature Reserve	WA
Unnamed WA42942	Nature Reserve	WA
Unnamed WA43903	Nature Reserve	WA
Unnamed WA44004	Nature Reserve	WA
Unnamed WA44676	5(1)(h) Reserve	WA
Unnamed WA44685	5(1)(h) Reserve	WA
Unnamed WA44690	5(1)(h) Reserve	WA
Unnamed WA44709	5(1)(h) Reserve	WA
Unnamed WA45089	Nature Reserve	WA
Unnamed WA46661	Nature Reserve	WA
Unnamed WA46895	5(1)(h) Reserve	WA
Unnamed WA48291	Conservation Park	WA
Unnamed WA48837	Nature Reserve	WA
Unnamed WA48955	5(1)(h) Reserve	WA
Unnamed WA49220	Conservation Park	WA
Unnamed WA49385	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Unnamed WA50017	Nature Reserve	WA
Unnamed WA50270	5(1)(h) Reserve	WA
Unnamed WA50574	5(1)(h) Reserve	WA
Unnamed WA50792	5(1)(h) Reserve	WA
Unnamed WA51943	5(1)(h) Reserve	WA
Unnamed WA53313	Conservation Park	WA
Unnamed WA53843	National Park	WA
Unnamed WA54326	Nature Reserve	WA
Vasse-Wonnerup Wetlands	Nature Reserve	WA
Voyagers Park	5(1)(h) Reserve	WA
Walpole And Nornalup Inlets	Marine Park	WA
Walpole-Nornalup	National Park	WA
Waychinicup	National Park	WA
West Cape Howe	National Park	WA
West Mount Mason	Nature Reserve	WA
William Bay	National Park	WA
Woody Island	Nature Reserve	WA
Woody Lake	Nature Reserve	WA
Yalgorup	National Park	WA

Regional Forest Agreements

[Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State
South-West Forest Region of Western Australia	Western Australia

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
25 Lot Residential Subdivision	2009/4830		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Abercrombie Road Quarry	2023/09465		Assessment
Aerial Application of Larvicide	2010/5490		Completed
Aerial Mosquito Spraying Vasse-Wonnerup System	2005/1952		Completed
Albany Heritage Park Link Trail, WA	2019/8480		Post-Approval
Anketell Road Upgrade (Leith Road to Kwinana Freeway)	2024/09841		Assessment
Bayonet Head Residential Development, Albany, WA	2015/7624		Completed
Beale Park Redevelopment	2022/09297		Completed
Bluewaters Power Station Expansion Phases 3 & 4	2008/4113		Completed
Bunbury Hospital Redevelopment Project	2025/10104		Referral Decision
Bunbury Water Resource Recovery Scheme - Stage 2 Pipeline	2022/9145		Completed
Construct and operate a 132kV transmission line and upgrade Kemerton Terminal Si	2008/4484		Completed
Dunsborough water supply pipeline upgrade	2024/09883		Completed
Freight handling expansion, Kwinana Rail Depot	2023/09474		Assessment
Fremantle District Police Complex Project	2022/09345		Completed
Gnarabup Tourism Development: Resort and Beach Village	2022/09224		Approval
H2Perth hydrogen and ammonia project	2023/09559		Completed
Installation of additional potable water tank	2023/09518		Assessment
Kwinana Alumina Refinery ? Future Residue Storage Area	2023/09454		Completed
Land clearing for limestone quarry	2023/09558		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Leeuwin Offshore Wind Farm	2022/9160		Assessment
Lillydale Road Widening	2023/09476		Completed
Lots 123,124& Pt Loc 170 Geographe Bay Road	2005/2317		Completed
Marina Quay Residential Development	2023/09673		Completed
Marine Route Survey for Subsea Fibre Optic Data Cable System - Australia West	2024/09826		Completed
Monaghan's Roundabout Project - Intersection of Bussell Highway and Caves Road, Shire of Busselton	2007/3515		Completed
Outer Harbour Port Development, Kwinana	2024/09859		Assessment
Production horticulture in Lot 6 and Lot 8 Old Coast Road, Myalup	2020/8827		Assessment
Proposed Sand Extraction at Lot 601 Stanley Road, Wellesley, WA	2020/8635		Completed
Residential development, Dalyellup, WA	2023/09550		Assessment
Residential Development, Lot 522 Ditchingham Place Australind, WA	2019/8432		Completed
Residential Development, Wattleup Road, Hammond Park, WA	2021/8933		Post-Approval
Runnymede Road Sand Quarry	2022/09262		Completed
Runnymede Road Sand Quarry	2022/09332		Completed
Sand Extraction on 150 Runnymede Road Binningup	2022/09364		Assessment
Sand Extraction Project Lot 5 Wellesley Road, Wellesley Shire of Harvey	2021/9034		Approval
SMAP telecommunications submarine cable installation	2024/09989		Completed
South Thomson Development Barge Landing Development	2024/09975		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Submarine Rotational Force ? West, Priority Infrastructure Works	2024/10031		Approval
Submarine Rotational Force ? West, Priority Infrastructure Works: Maritime Upgrades	2024/09943		Completed
Sydney Street Subdivision	2023/09530		Completed
WA Offshore Windfarm	2021/8961		Completed
Werillup Pipeline	2025/10121		Referral Decision
Controlled action			
313-316 Mimminup Road, Dalyellup	2012/6274	Controlled Action	Post-Approval
Aerial Application of Lavicide to Vasse-Wonnerup Wetlands	2010/5593	Controlled Action	Post-Approval
Airborne sonar trials	2001/540	Controlled Action	Completed
Albany Heritage Park Trail Network Concept Plan	2017/7943	Controlled Action	Completed
Albany Port Authority dredging project	2006/2540	Controlled Action	Post-Approval
Albany Ring Road Stages 2 and 3B, WA	2020/8769	Controlled Action	Post-Approval
Albemarle Lithium hydroxide manufacturing plant, Kemerton, WA	2017/8099	Controlled Action	Post-Approval
Alcoa Bauxite Residue Storage Area Extension	2011/5878	Controlled Action	Further Information Request
All weather access track road between Windy Harbour and Nelson Location 7965	2011/6121	Controlled Action	Post-Approval
Binningup Beach Residential Development, Lots 195, 304, 9003 Lakes Parade, Binningup WA	2009/5046	Controlled Action	Post-Approval
Bunbury Outer Ring Road Northern and Central Section Project, WA	2019/8471	Controlled Action	Post-Approval
Bunbury Outer Ring Road Southern Section	2012/6652	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Bunbury Outer Ring Road Southern Section project, WA	2019/8543	Controlled Action	Final PD
Bunbury Port Berth 14A Expansion & Coal Storage & Loading Facility, WA	2014/7200	Controlled Action	Post-Approval
Bussell Highway - Capel to Hutton Section, WA	2015/7626	Controlled Action	Post-Approval
Bussell Highway Duplication Hutton to Sabina	2020/8800	Controlled Action	Post-Approval
Busselton Foreshore Redevelopment from West Street to Ford Road	2013/6830	Controlled Action	Post-Approval
Capecare, urban and commercial new development, Aged Care - Naturaliste Terrace, Dunsborough, WA	2006/2834	Controlled Action	Post-Approval
Cape View Resort at Lot 190 Little Colin Street	2006/3070	Controlled Action	Post-Approval
Clear 2.86 ha of native vegetation for the purpose of horticulture	2010/5655	Controlled Action	Post-Approval
Clearing for Bunbury Airport Expansion, WA	2013/6872	Controlled Action	Post-Approval
Clearing of Lots 2 and 10 Rowley Road, Mandogalup WA	2018/8182	Controlled Action	Assessment Approach
Construction of a Deepwater, General Container Port	2009/5178	Controlled Action	Proposed Decision
Construction of New Perth Bunbury Highway project	2005/2193	Controlled Action	Post-Approval
Construction of new sporting field	2007/3333	Controlled Action	Post-Approval
Dalyellup Beach Estate - Residential Development	2007/3361	Controlled Action	Post-Approval
Dawson Beach Estate Stage 2	2005/2153	Controlled Action	Post-Approval
Development Guide Plan for 46 ha Residential Subdivision	2008/4102	Controlled Action	Post-Approval
Development of Busselton Health Campus	2011/6011	Controlled Action	Post-Approval
Development of Kwinana Quay port facility	2008/4387	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Development of Lot 9018 Martingale Road and Lot 377 Clinker Drive, Dunsborough, WA	2018/8278	Controlled Action	Further Information Request
Develop three sites into residential housing and mixed use developments, Western Australia	2013/6916	Controlled Action	Post-Approval
Develop Trails and a Wetlands Demonstration Site and Centre	2008/4439	Controlled Action	Post-Approval
Eastern Link Project, Busselton WA	2018/8155	Controlled Action	Post-Approval
Emu Point Residential Area Project	2010/5479	Controlled Action	Completed
Extension of Beeliar Drive between the junction of Mayor and Fawcett Roads an...	2003/1029	Controlled Action	Completed
Flat Rock boating facility	2008/4506	Controlled Action	Post-Approval
Grain Receivals Depot	2001/170	Controlled Action	Post-Approval
Halls Head Shopping Centre stages 2 & 3 expansion	2010/5636	Controlled Action	Post-Approval
Industry Zone	2010/5337	Controlled Action	Post-Approval
Latitude 32-industrial development of various lots, Ashley and Sayer Roads, Hope Valley, WA	2016/7695	Controlled Action	Post-Approval
Lennox Weir Removal, 12kms west Busselton	2021/8915	Controlled Action	Assessment Approach
Lot 2 Corner Durrant Avenue and Sicklemore Road - Residential Development	2011/5882	Controlled Action	Completed
Lot 4 Runnymede Road, Wellesley - Proposed Sand Extraction	2020/8862	Controlled Action	Assessment Approach
Lot 505 Hungerford Avenue, Halls Head, WA Residential Development	2009/4789	Controlled Action	Post-Approval
Lower Vasse River Sediment Removal	2021/9051	Controlled Action	Post-Approval
Mandurah Junction Commercial and Residential Development	2010/5410	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Mangles Bay Marina Based Tourist Precinct	2010/5659	Controlled Action	Post-Approval
Milyeannup Wind Farm	2009/4911	Controlled Action	Post-Approval
Mixed Use Residential and Commercial Development	2009/4919	Controlled Action	Post-Approval
Natural Gas Pipeline Expansion	2006/2813	Controlled Action	Post-Approval
Neighbourhood Shopping Centre and Mixed Business Centre, Ocean Road, Dawesville	2006/3155	Controlled Action	Post-Approval
Old Broadwater Farm Estate Subdivision - Stage 3	2009/5231	Controlled Action	Post-Approval
Parklands West Estate Development	2010/5693	Controlled Action	Post-Approval
Peel's Retreat Estate - Residential development	2006/3063	Controlled Action	Post-Approval
Peppermint Park Residential Subdivision - Stage 5	2008/4028	Controlled Action	Post-Approval
Plantagenet Location 1181, Cape Riche	2001/158	Controlled Action	Completed
Point Grey Marina Project	2010/5515	Controlled Action	Post-Approval
Point Grey Residential Development - Terrestrial Component	2011/5825	Controlled Action	Post-Approval
Proposed excavation and earthworks at existing quarry, prior to subdivision	2008/4562	Controlled Action	Completed
Proposed Urban Development	2008/3984	Controlled Action	Post-Approval
Ravensthorpe Nickel Project	2001/172	Controlled Action	Post-Approval
Residential/Industrial subdivision, Lot 18, Vasse Highway, Shire of Busselton	2006/3208	Controlled Action	Post-Approval
Residential Development	2007/3463	Controlled Action	Post-Approval
Residential development, College Grove, WA	2015/7579	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Residential Development, Lot 3 & 4 Dorsett Street	2006/2774	Controlled Action	Completed
Residential development, Lots 21 and 100 Southern Estuary Road, Herron, WA	2017/8135	Controlled Action	Completed
Residential development Lot 3, 500 Bussell Highway, WA	2013/7098	Controlled Action	Post-Approval
Residential development Lots 8 & 9 King Street	2006/2787	Controlled Action	Completed
Residential subdivision, Lot 501 Vasse Hwy, Yalyalup, WA	2018/8244	Controlled Action	Post-Approval
retirement units & aged care facility development	2007/3533	Controlled Action	Post-Approval
Roe Highway extension, Kwinana Freeway to Stock Road, WA	2009/5031	Controlled Action	Post-Approval
Rural Subdivision of a 975.2ha property	2004/1635	Controlled Action	Completed
Sand and limestone extraction	2003/1284	Controlled Action	Completed
Sand and Limestone Extraction on Lots 313 and 314, Harewoods Road	2005/2291	Controlled Action	Completed
Sand Mine, Lot 122 Old Coast Road, Parkfield, Binningup, WA	2014/7164	Controlled Action	Post-Approval
Sand Mining on Lot 7 Runnymede Road	2011/5996	Controlled Action	Post-Approval
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed
Shenton Park Subdivision	2004/1479	Controlled Action	Completed
Smiths Beach Project, Yallingup - Coastal Tourism Village	2021/9141	Controlled Action	Referral Publication
Somerville Drive Extension	2011/6153	Controlled Action	Post-Approval
Southdown Magnetite Mine	2006/2544	Controlled Action	Completed
Southdown Magnetite Project	2011/6053	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Southern Bluefin Tuna Farm	2005/2165	Controlled Action	Completed
Southern Seawater Desalination Project	2008/4173	Controlled Action	Post-Approval
Subdivision Lot 1 Dawesville Rd	2005/2394	Controlled Action	Post-Approval
Three Turning Pockets West of Busselton Townsite	2002/846	Controlled Action	Post-Approval
Tourism Villa Facility Development	2008/4025	Controlled Action	Post-Approval
tourist and residential development	2007/3483	Controlled Action	Post-Approval
Upgrade of Ford Road	2005/2113	Controlled Action	Completed
Urban development, multiple lots Northerly Street, Vasse, WA	2019/8494	Controlled Action	Assessment Approach
Urban Development Ravendale Drive, Coodanup Drive & Wanjeep Street	2011/5928	Controlled Action	Post-Approval
Vasse Diversion Drain Upgrade	2017/7932	Controlled Action	Post-Approval
Warders Hotel, Block 1 Warders Cottages, Fremantle, WA	2018/8144	Controlled Action	Post-Approval
Wonnerup South Mineral Sands Project, Yalyalup, WA	2014/7135	Controlled Action	Post-Approval
Wonnerup Titanium Mineral Mining Project	2010/5403	Controlled Action	Post-Approval
Yarragadee Water Supply Development	2005/2073	Controlled Action	Completed
Not controlled action			
'Looping 10' gas transmission pipeline from Kwinana to Hopelands	2005/2212	Not Controlled Action	Completed
4wd coastal track stabilisation & rehabilitation, Bettys Beach Reserve, WA	2013/7087	Not Controlled Action	Completed
9 lot 40.4407 ha rural residential subdivision development 1181 Sandalwood Rd, Wellstead	2007/3451	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Aerial application of mosquito larvicides to Vasse Wonnerup Wetlands, WA	2016/7780	Not Controlled Action	Completed
Albany Port Maintenance Dredging, Albany, WA	2014/7246	Not Controlled Action	Completed
Anzac Centre Develpment, Albany, WA	2012/6571	Not Controlled Action	Completed
Anzac Interpretive Centre Development, Albany, WA	2013/6903	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
Bibra Lake Aboriginal Cultural Centre Development	2020/8642	Not Controlled Action	Completed
Bunbury Water Resources Recovery Scheme-Recycled Water Treatment Plant	2021/8986	Not Controlled Action	Completed
Bushfire Mitigation Works - City of Mandurah	2020/8674	Not Controlled Action	Completed
Busselton-Margaret River Regional Airport Development Project, WA	2016/7675	Not Controlled Action	Completed
Busselton to Flinders Bay Rails to Trails Project, WA	2013/6835	Not Controlled Action	Completed
Cape Naturaliste Road Shared Pathway, Dunsborough, WA	2018/8282	Not Controlled Action	Completed
Causeway Bridge Duplication, Busselton, WA	2018/8309	Not Controlled Action	Completed
Caves Road and Cape Naturaliste Road Intersection Upgrade	2012/6395	Not Controlled Action	Completed
Caves Road widening project between Dunsborough and Yallingup(20.3 -24.6 SLK), WA	2015/7475	Not Controlled Action	Completed
Clearing and development of 220 and 234 Wattleup Rd, Wattleup, WA	2016/7738	Not Controlled Action	Completed
Clear Lot 503, 54 Ocean Road Dawesville, WA	2014/7375	Not Controlled Action	Completed
Construction and operation of an 8 turbine wind farm at Rous Head Harbour, Frema	2003/933	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Construction of a water soak dam for fire suppression Lot 304 Rest Point Road, Walpole, WA	2014/7409	Not Controlled Action	Completed
Construction of Secret Harbour High School	2004/1489	Not Controlled Action	Completed
CTBT - Cape Leeuwin Hydroacoustic Station Proposal	2000/27	Not Controlled Action	Completed
Demolish and replace Old Mandurah Traffic Bridge, Mandurah, WA	2015/7415	Not Controlled Action	Completed
Development of Grasmere Wind Farm	2008/4368	Not Controlled Action	Completed
Development of Lots 100-101 Sayer Road, Hope Valley, WA	2019/8399	Not Controlled Action	Completed
Disposal of residential properties, Fremantle, WA	2019/8593	Not Controlled Action	Completed
Earthworks and Excavation of Lots 2, 13 & 22 Old Coast Road	2009/5101	Not Controlled Action	Completed
Eastport canal estate development stage 5	2007/3737	Not Controlled Action	Completed
Establishment of a National Lifestyle Village	2011/6081	Not Controlled Action	Completed
Expansion of berthing facilities at Kwinana Bulk Terminal	2006/2509	Not Controlled Action	Completed
Expansion of existing Ammonium Nitrate Production Facility	2005/1941	Not Controlled Action	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891	Not Controlled Action	Completed
Extension of Brittain Road to connect with the South Western Hwy/Robertson Drive intersection	2007/3707	Not Controlled Action	Completed
Extension of commercial sand extraction operation, Shire of Capel WA	2003/1250	Not Controlled Action	Completed
Extension of Existing Limestone Quarry at Lot 5 Old Coast Road	2006/2831	Not Controlled Action	Completed
Florida Estate Residential Subdivision Development Stage 13	2011/6045	Not Controlled Action	Completed
Florida North residential development, Lot 9008, Ocean	2015/7462	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Road, Dawesville, WA			
Fremantle Ports Inner Harbour Capital Dredging Proposal	2005/2477	Not Controlled Action	Completed
Gas-fired Power Station	2005/2213	Not Controlled Action	Completed
Geo-science Investigations	2005/2069	Not Controlled Action	Completed
Hammond West Urban Development, Hammond Park, WA	2017/7917	Not Controlled Action	Completed
Hope Valley-Wattleup Redevelopment Project	2020/8644	Not Controlled Action	Completed
Horizontal drilling from Lot 35 Ballarat Rd under Wonnerup Inlet	2004/1354	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Industrial development, Lot 561 Paris Road, Australind, WA	2016/7712	Not Controlled Action	Completed
Industrial development 105 Sayer Road, Hope Valley, WA	2014/7261	Not Controlled Action	Completed
Industrial Development Lot 64 Ashley Road, Hope Valley, WA	2014/7238	Not Controlled Action	Completed
Kemerton Lateral Gas Pipeline Project	2005/2388	Not Controlled Action	Completed
Kennedy Bay urban development, Port Kennedy, WA	2014/7122	Not Controlled Action	Completed
Kennedy Park Estate Residential Development	2003/1044	Not Controlled Action	Completed
Kwinana Depot Upgrade	2011/6035	Not Controlled Action	Completed
Kwinana Gas-Fired Power Station	2005/2101	Not Controlled Action	Completed
larvaciding of potential mosquito breeding wetlands	2006/2601	Not Controlled Action	Completed
Latitude 32 industrial development 6A, Cockburn, WA	2018/8193	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Limestone quarry expansion	2005/2268	Not Controlled Action	Completed
Limestone Quarry Expansion, Lots 3618 and 1794, Finn Road	2005/2332	Not Controlled Action	Completed
Limestone quarry mining	2006/2942	Not Controlled Action	Completed
Lot 101 Mandurah Road, Madora Bay, WA	2012/6466	Not Controlled Action	Completed
Lot 170 Hope Valley Road, Hope Valley	2020/8830	Not Controlled Action	Completed
Lot 200 Caves Road Tourist Accommodation	2020/8775	Not Controlled Action	Completed
Mandurah Quay Residential Development	2010/5754	Not Controlled Action	Completed
Mount Barker to Albany Water Supply Pipeline	2013/6720	Not Controlled Action	Completed
New automotive centre at the Southwest Institute of Technology, Bunbury, WA	2010/5766	Not Controlled Action	Completed
Oman Australia Cable Installation, WA	2021/8922	Not Controlled Action	Completed
Oman Australia Cable - Marine Route Survey	2020/8731	Not Controlled Action	Completed
Palm Beach Caravan Park Redevelopment, Rockingham, WA	2013/6853	Not Controlled Action	Completed
Perth Desalination Plant 2	2019/8454	Not Controlled Action	Completed
Perth Seawater Desalination Project: Thomsons Lake to Kogolup Pipeline	2005/1971	Not Controlled Action	Completed
Port of Esperance Maintenance Dredging, WA	2013/6822	Not Controlled Action	Completed
Proposed Expansion of Existing Gracetown Townsite & Upgrade of Existing Associa	2010/5358	Not Controlled Action	Completed
Proposed Fuel Reduction Burn, Loughton Park, Bunbury, WA	2014/7148	Not Controlled Action	Completed
Protected Harbour Development	2006/3091	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Redevelopment of Lots 3 & 4, Kent Street	2007/3243	Not Controlled Action	Completed
Redevelopment of Purvis Street school site, Hamilton Hill, WA	2018/8255	Not Controlled Action	Completed
Replacement Floodgates	2003/1010	Not Controlled Action	Completed
Residential & Light Industrial Development, Vasse WA	2013/6932	Not Controlled Action	Completed
Residential development, Lot 42, Farmhouse Court, Bovell, WA	2014/7195	Not Controlled Action	Completed
Residential development, Lot 74 Wattleup Road, Hammond Park, WA	2018/8273	Not Controlled Action	Completed
Residential development, Lots 120-121 Minninup Road, Dalyellup WA	2018/8254	Not Controlled Action	Completed
Residential Development - Assorted Lots Parade Rd, Washington Av & Bussell Hwy, Usher WA	2013/6935	Not Controlled Action	Completed
Residential Development of Lots 76 and 107 Wattleup Road, Hamond Park	2020/8865	Not Controlled Action	Completed
Residential development on part of Lot 2 Fanstone Avenue, Beeliar, WA	2016/7726	Not Controlled Action	Completed
Residential-Rural Subdivision, Lot 1 Kudardup Rd, Kudardup, WA	2012/6471	Not Controlled Action	Completed
Residential Subdivision, Lot 90 Leisure Way, Halls Head, WA	2018/8175	Not Controlled Action	Completed
Re-zoning of Land for Future Residential Development Purposes	2009/4908	Not Controlled Action	Completed
Rezoning of Lot 31, 80-lot Residential Subdivision	2008/4680	Not Controlled Action	Completed
Roe Highway - Karel Avenue to Hope Road Bridge Project	2005/2061	Not Controlled Action	Completed
Rottnest Lodge Redevelopment	2019/8565	Not Controlled Action	Completed
Rural Residential Development Lot 7 Dunkeld Drive, Herron, WA	2014/7340	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Sand Extraction, Lot 265 Ducane Road, Gelorup, WA	2012/6616	Not Controlled Action	Completed
Scuttling of the HMAS Perth	2001/171	Not Controlled Action	Completed
Secondary School Campus Development at Lot 150 Leisure Drive, Australind	2013/6744	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Sepia Depression Ocean Outlet Landline Duplication	2012/6248	Not Controlled Action	Completed
Stanley Road waste management facility, Wellesley, WA	2014/7131	Not Controlled Action	Completed
Tea Tree Planting, Walpole region, WA	2019/8397	Not Controlled Action	Completed
Titanium Mining	2001/340	Not Controlled Action	Completed
Urban development, Lot 109 Wattleup Road, Hammond Park, WA	2015/7425	Not Controlled Action	Completed
Urban development of Lot 107 Wattleup Road, Hammond Park, WA	2017/7890	Not Controlled Action	Completed
urban residential development	2006/2924	Not Controlled Action	Completed
Vasse Hotel and Supermarket Redevelopment	2001/288	Not Controlled Action	Completed
Vegetation Clearance for Horticulture Operation Expansion, Lot 2, Springfield Rd, Parkfield, WA	2014/7196	Not Controlled Action	Completed
Vegetation clearing for sand extraction, Lot 268 Leeuwin Road, Augusta	2013/6860	Not Controlled Action	Completed
Warders' Cottages Block 2 'W2'	2022/9148	Not Controlled Action	Completed
Warders' Cottages W2 minor works, Fremantle, WA	2018/8185	Not Controlled Action	Completed
Wind Farm development	2005/2105	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Woodcrest Rise Estate Residential Development	2007/3794	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2007/3273	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey Within WA-382-P	2007/3799	Not Controlled Action (Particular Manner)	Post-Approval
Ambergate North Residential Development	2009/4802	Not Controlled Action (Particular Manner)	Post-Approval
Arcadia Petroleum - BR12 3D Marine Seismic Survey	2012/6476	Not Controlled Action (Particular Manner)	Post-Approval
Australian Underwater Discovery Centre	2021/9019	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Australind Piggery expansion	2014/7117	Not Controlled Action (Particular Manner)	Post-Approval
Bremer Basin 2D Marine Seismic Survey, WA	2009/5013	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Garden Island Project, offshore WA	2016/7635	Not Controlled Action (Particular Manner)	Post-Approval
CETO 6 Geophysical and Geotechnical Surveys	2014/7408	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
City of Cockburn Sporting Facilties	2005/2139	Not Controlled Action (Particular Manner)	Post-Approval
Construction of Mandurah Entrance Road	2009/4692	Not Controlled Action (Particular Manner)	Post-Approval
Construction of urea production plant and supporting infrastructure	2009/5067	Not Controlled Action (Particular Manner)	Post-Approval
Coodanup residential development	2006/3073	Not Controlled Action (Particular Manner)	Post-Approval
Country Road Estate - Final Stage Development	2006/3095	Not Controlled Action (Particular Manner)	Post-Approval
Dalyellup Beach Estate Stages 12 and 14, near Bunbury	2004/1726	Not Controlled Action (Particular Manner)	Post-Approval
Dalyellup Beach Estate - Stages 13 and 16	2006/3075	Not Controlled Action (Particular Manner)	Post-Approval
Extension and Renewal of Existing Sand Quarry	2008/4326	Not Controlled Action (Particular Manner)	Post-Approval
Extension of existing mains water supply pipeline	2009/4686	Not Controlled Action (Particular Manner)	Post-Approval
Extension of Spearwood Ave, from Barrington Rd to Miguel Rd	2009/5140	Not Controlled Action (Particular Manner)	Post-Approval
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Lake Richmond Boardwalk installation, Rockingham, WA	2013/6977	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Limestone Extraction on Lot 5 Old Coast Road, Myalup, WA	2012/6468	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey	2012/6275	Not Controlled Action (Particular Manner)	Post-Approval
McCourt Hills Estate Stage 3	2006/2760	Not Controlled Action (Particular Manner)	Post-Approval
Multipurpose development stage 1 within 340ha	2004/1913	Not Controlled Action (Particular Manner)	Post-Approval
Novacare Lifestyle Village	2001/311	Not Controlled Action (Particular Manner)	Post-Approval
Road upgrades and walk trail development	2009/4958	Not Controlled Action (Particular Manner)	Post-Approval
Sand and Limestone Extraction on Lots 313 and 314, Harewoods Road	2005/2346	Not Controlled Action (Particular Manner)	Post-Approval
South Busselton Primary School	2001/290	Not Controlled Action (Particular Manner)	Post-Approval
South West Metropolitan Railway Project	2003/1175	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Stratham Park Estate Subdivision - Lots 70, 11 and 12	2008/4068	Not Controlled Action (Particular Manner)	Post-Approval
Subdivision and development of residential dwelling on part Lot 1, Bussell Highw	2006/3023	Not Controlled Action (Particular Manner)	Post-Approval
Widening of Ludlow North Road Between Peppermint Grove Road and Mallokup Road	2009/5242	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic survey	2007/3725	Referral Decision	Completed
3D Seismic Survey	2012/6245	Referral Decision	Completed
Albany Port Maintenance Dredging	2010/5527	Referral Decision	Completed
Ambergate North Residential Community (4896 lots)	2008/4617	Referral Decision	Completed
Bunbury Port Berth 14 Development, Bunbury Port Inner Harbour	2011/6023	Referral Decision	Completed
Bunbury WRRS - Stage 2 Pipeline	2021/9092	Referral Decision	Completed
CO2 3D Seismic Survey Vlaming Sub-Basin	2012/6343	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed
Harvesting of Pinus Radiata Plantation	2010/5414	Referral Decision	Completed
Kennedy Bay Urban Development,PortKennedy,Rockingh	2013/7022	Referral Decision	Completed
Lots 1-5 Bluerise Cove & Lots 801 & 124 Pleasant Grove Rezoning and Subdivision	2008/4295	Referral Decision	Completed
Narelle 3D Marine Seismic Survey	2008/4575	Referral Decision	Completed
Residential Subdivision Lot 801 Pleasant Grove Circle, Falcon, WA	2012/6507	Referral Decision	Referral Publication

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Rezoning of Crown Reserve 39181 to facilitate future residential development	2005/2096	Referral Decision	Completed
Riverbank and Country Road Estates Lot 43 Bussell Highway	2005/2367	Referral Decision	Completed
Sonar Trials and Acoustic Trials	2001/538	Referral Decision	Completed
Water quality improvement trial, Lower Vasse River, Busselton, WA	2013/6975	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Albany Canyons group and adjacent shelf break	South-west
Ancient coastline at 90-120m depth	South-west
Cape Mentelle upwelling	South-west
Commonwealth marine environment surrounding the Recherche Archipelago	South-west
Commonwealth marine environment within and adjacent to Geographe Bay	South-west
Commonwealth marine environment within and adjacent to the west coast inshore lagoons	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes		
Flesh-footed Shearwater [82404]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging	Likely to occur
Hydroprogne caspia Caspian Tern [808]	Foraging	Known to occur
Larus pacificus Pacific Gull [811]	Foraging	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging	Likely to occur
Onychoprion fuscatus Sooty Tern [90682]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Likely to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging	Known to occur
Pterodroma mollis Soft-plumaged Petrel [1036]	Foraging	Known to occur
Puffinus assimilis Little Shearwater [59363]	Foraging	Likely to occur
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
[Sternula nereis](#) Fairy Tern [82949]	Foraging	Known to occur
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Foraging	Likely to occur
Seals		
[Neophoca cinerea](#) Australian Sea Lion [22]	Foraging	Likely to occur
Sharks		
[Carcharodon carcharias](#) White Shark [64470]	Foraging	Known to occur
Whales		
[Balaenoptera musculus](#) Blue and Pygmy Blue Whale [36]	Foraging	Known to occur
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]	Foraging	Likely to be present
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]	Migration	Known to occur
[Eubalaena australis](#) Southern Right Whale [40]	Migration	
[Eubalaena australis](#) Southern Right Whale [40]	Reproduction	
[Megaptera novaeangliae](#) Humpback Whale [38]	Migration	Known to occur
[Physeter macrocephalus](#) Sperm Whale [59]	Foraging	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 25-Jun-2026

Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements

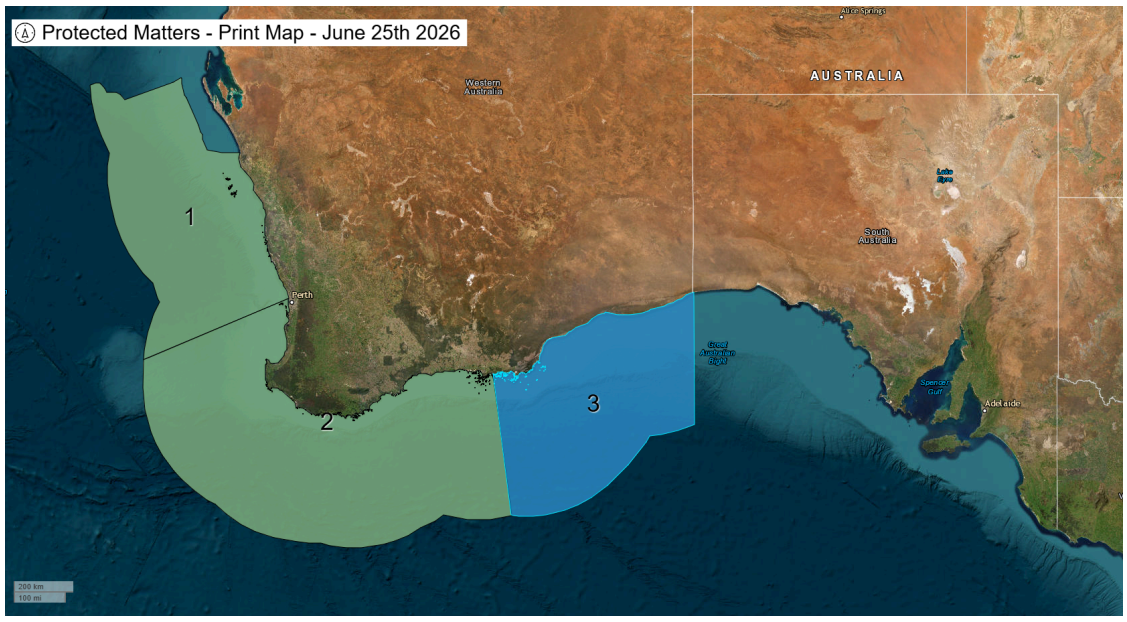


Figure 1: South West Marine Region - East (Part 3)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	60
Listed Migratory Species:	70

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	98
Whales and Other Cetaceans:	35
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	7
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	10
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	13
Key Ecological Features (Marine):	3
Biologically Important Areas:	18
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Indigenous		
Cheetup Rock Shelter	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Species or species habitat likely to occur within area
Zanda latirostris listed as Calyptorhynchus latirostris		
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat likely to occur within area
FISH		
Hoplostethus atlanticus		
Orange Roughy, Deep-sea Perch, Red Roughy [68455]	Conservation Dependent	Species or species habitat likely to occur within area
Seriolella brama		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat likely to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Dasyurus geoffroii		
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding likely to occur within area
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
[Petrogale lateralis hacketti](#) Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat likely to occur within area
[Petrogale lateralis lateralis](#) Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Translocated population known to occur within area
PLANT		
[Adenanthos eyrei](#) Toolinna Adenanthos [7763]	Endangered	Species or species habitat likely to occur within area
[Anigozanthos bicolor subsp. minor](#) Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw [21241]	Endangered	Species or species habitat likely to occur within area
[Eucalyptus insularis](#) Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
[Lambertia echinata subsp. echinata](#) Prickly Honeysuckle [56729]	Endangered	Species or species habitat likely to occur within area
[Ricinocarpos trichophorus](#) Barrens Wedding Bush [19931]	Endangered	Species or species habitat may occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Galeorhinus galeus Tope, Flake, Oil Shark, School Shark [68453]	Conservation Dependent	Species or species habitat likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat likely to occur within area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Species or species habitat likely to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
[Calidris alba](#) Sanderling [875]		Species or species habitat likely to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris falcinellus as Limicola falcinellus](#) Broad-billed Sandpiper [91731]		Species or species habitat likely to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ruficollis Red-necked Stint [860]		Species or species habitat likely to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris falcinellus as Limicola falcinellus Broad-billed Sandpiper [91731]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat likely to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding likely to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat likely to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat likely to occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Eudyptula minor Little Penguin [1085]		Breeding likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Halobaena caerulea](#) Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
[Himantopus himantopus](#) Pied Stilt, Black-winged Stilt [870]		Species or species habitat likely to occur within area overfly marine area
[Hydroprogne caspia as Sterna caspia](#) Caspian Tern [808]		Breeding likely to occur within area
[Larus pacificus](#) Pacific Gull [811]		Breeding likely to occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
[Limosa limosa](#) Black-tailed Godwit [845]	Endangered	Species or species habitat likely to occur within area overfly marine area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Macronectes halli](#) Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding likely to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding likely to occur within area
Phalaropus lobatus Red-necked Phalarope [838]		Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat likely to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat likely to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Fish		
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Idiotropiscis australe as Acentronura australe Southern Pygmy Pipehorse [74958]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding likely to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptile		

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Berardius arnuxii Arnoux's Beaked Whale [70]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Hyperoodon planifrons](#) Southern Bottlenose Whale [71]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Eastern Recherche	National Park Zone (IUCN II)
Eastern Recherche	National Park Zone (IUCN II)
Twilight	National Park Zone (IUCN II)
Eastern Recherche	Special Purpose Zone (IUCN VI)
Great Australian Bight	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Twilight	Special Purpose Zone (Mining Exclusion) (IUCN VI)
Twilight	Special Purpose Zone (Mining Exclusion) (IUCN VI)

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Alexander	Nature Reserve	WA
Cape Arid	National Park	WA
Cape Le Grand	National Park	WA
Eucla	National Park	WA
Far West Coast	Marine Park	SA
Great Australian Bight	Marine National Park	SA
Nullarbor	Wilderness Protection Area	SA
Nuytsland	Nature Reserve	WA
Recherche Archipelago	Nature Reserve	WA
Unnamed WA27087	Nature Reserve	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
BightSPAN 2D Marine Seismic Survey	2009/4750		Completed
SMAP telecommunications submarine cable installation	2024/09989		Completed
Western Green Energy Hub	2024/10049		Assessment
Not controlled action			
Bight Basin Geological Survey	2006/3137	Not Controlled Action	Completed
Expedition 369-Australian Cretaceous Climate and Tectonics, Australian EEZ waters	2017/7891	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-	2004/1700	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
basin			
Not controlled action (particular manner)			
Grand Southern Margin 2D Marine Seismic Survey	2008/4599	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
BightSPAN 2D Marine Seismic Survey	2009/4695	Referral Decision	Completed
Eldrad MC3D Seismic Survey, Bight Basin	2014/7128	Referral Decision	Completed
Grand Southern Margin 2D Marine Seismic Survey	2008/4573	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Albany Canyons group and adjacent shelf break	South-west
Ancient coastline at 90-120m depth	South-west
Commonwealth marine environment surrounding the Recherche Archipelago	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Seabirds		
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur
Eudyptula minor Little Penguin [1085]	Foraging	Likely to occur

Scientific Name	Behaviour	Presence
Hydroprogne caspia Caspian Tern [808]	Foraging	Known to occur
Larus pacificus Pacific Gull [811]	Foraging	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging	Likely to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Phalacrocorax fuscescens Black-faced Cormorant [59660]	Foraging	Likely to occur
Pterodroma macroptera macroptera Great-winged Petrel (macroptera race) [1035]	Foraging	Known to occur
Puffinus assimilis Little Shearwater [59363]	Foraging	Likely to occur
Sternula nereis Fairy Tern [82949]	Foraging	Known to occur
Seals		
Neophoca cinerea Australian Sea Lion [22]	Foraging	Likely to occur
Sharks		
Carcharodon carcharias White Shark [64470]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Eubalaena australis Southern Right Whale [40]	Migration	
Eubalaena australis Southern Right Whale [40]	Reproduction	
Physeter macrocephalus Sperm Whale [59]	Foraging	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

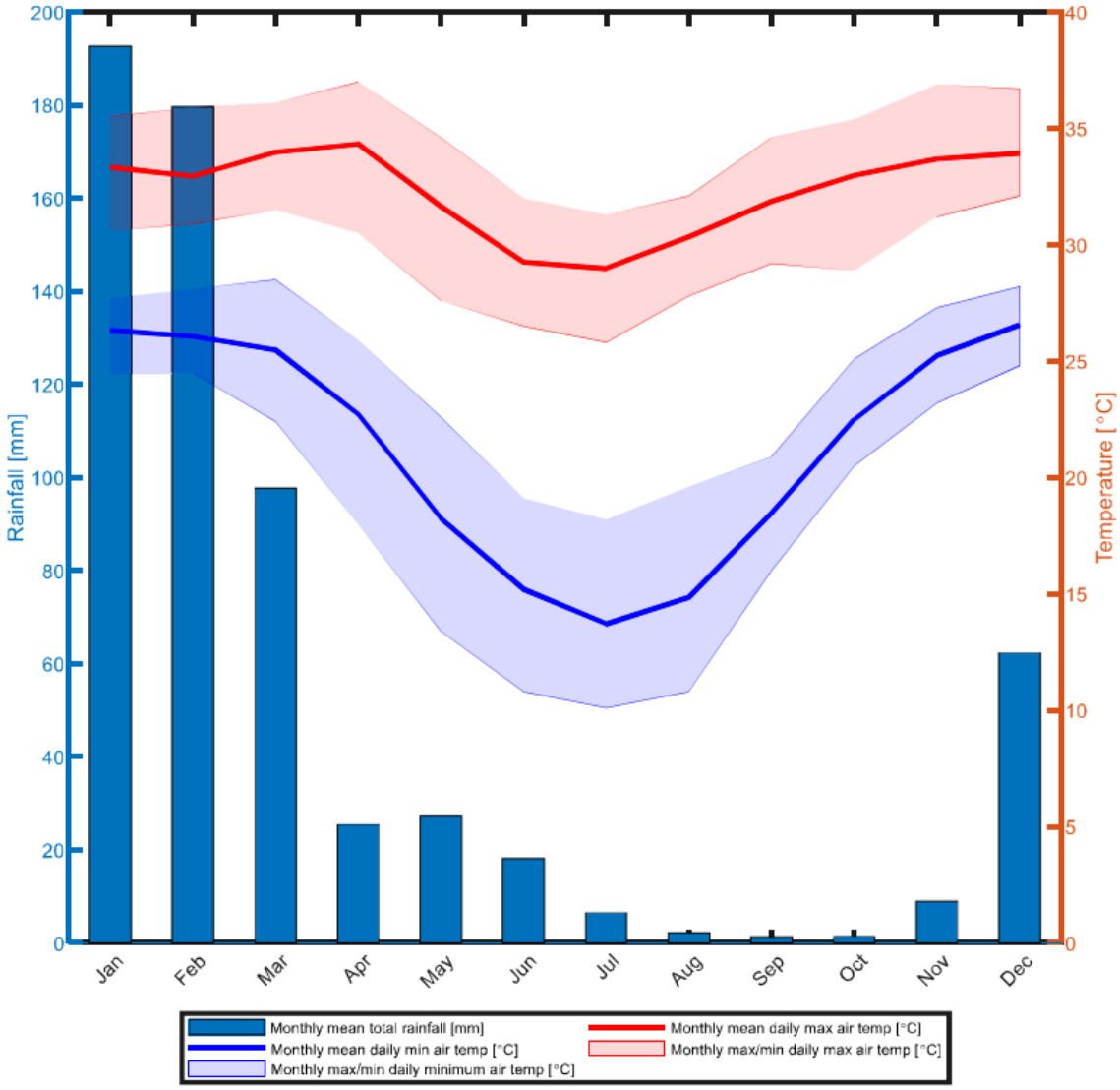
The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX B SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

Browse



Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

Figure 1: Monthly average total rainfall (mm) and air temperature (°C), calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology, 2020)

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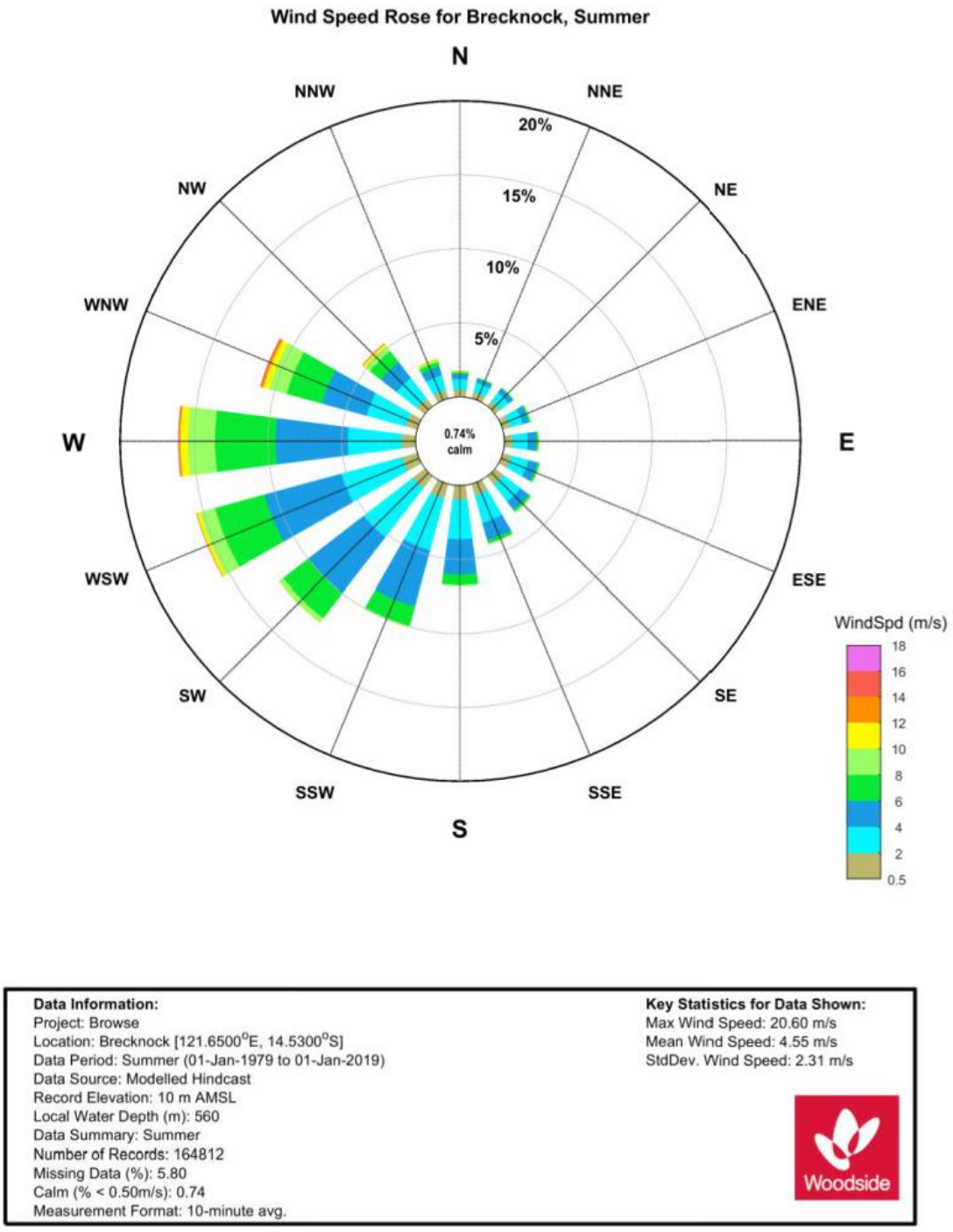


Figure 2: Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019)

Note, tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the west-northwest to southwest due to the North West Monsoon (Woodside, 2019).

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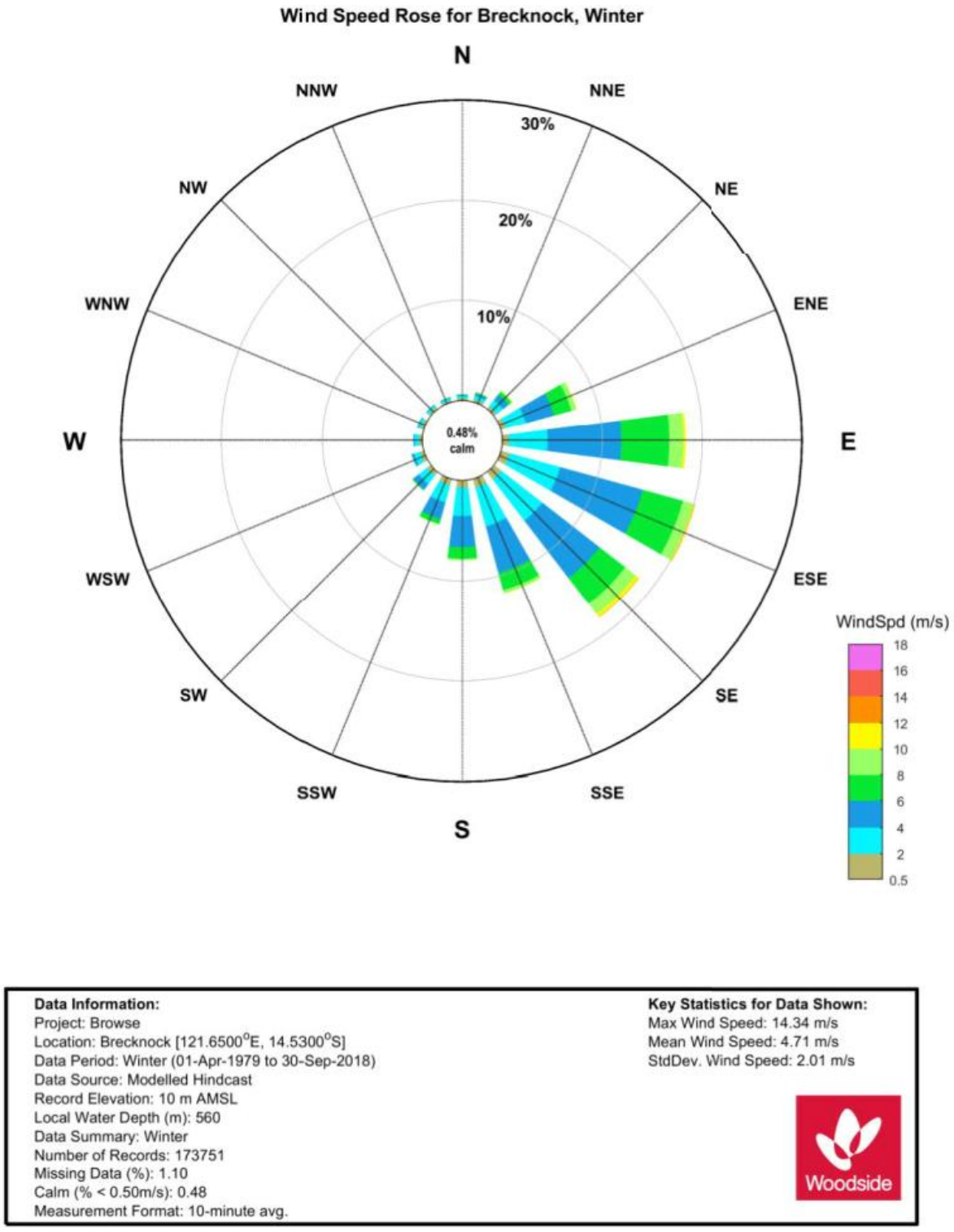


Figure 3: Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd 2019)

Note, tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the east to southeast due to the South East Trade Winds coming from the Australian mainland (Woodside, 2019).

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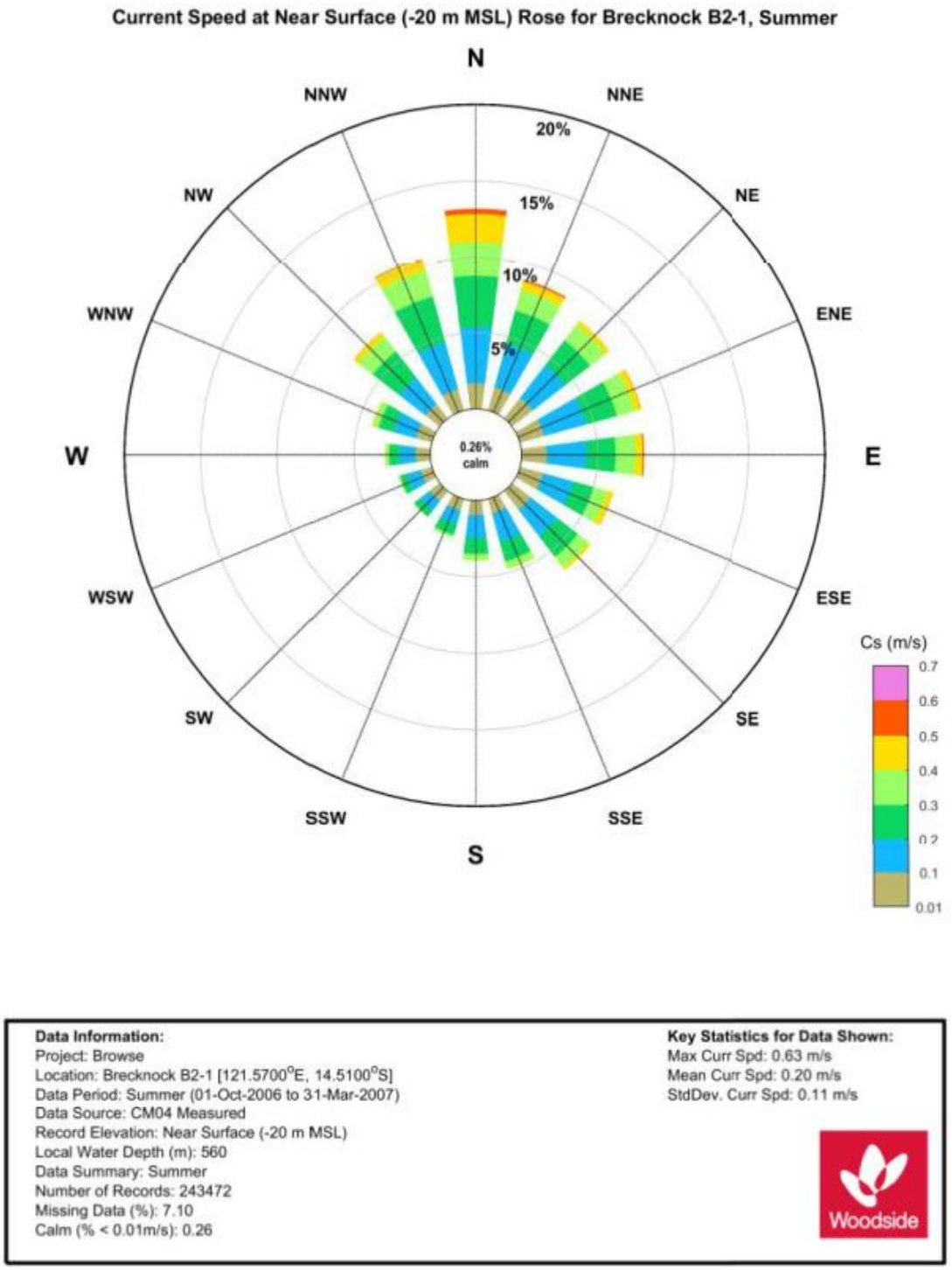


Figure 4: Summer (Nov to Apr) near-surface combined frequency of one-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd, 2008)

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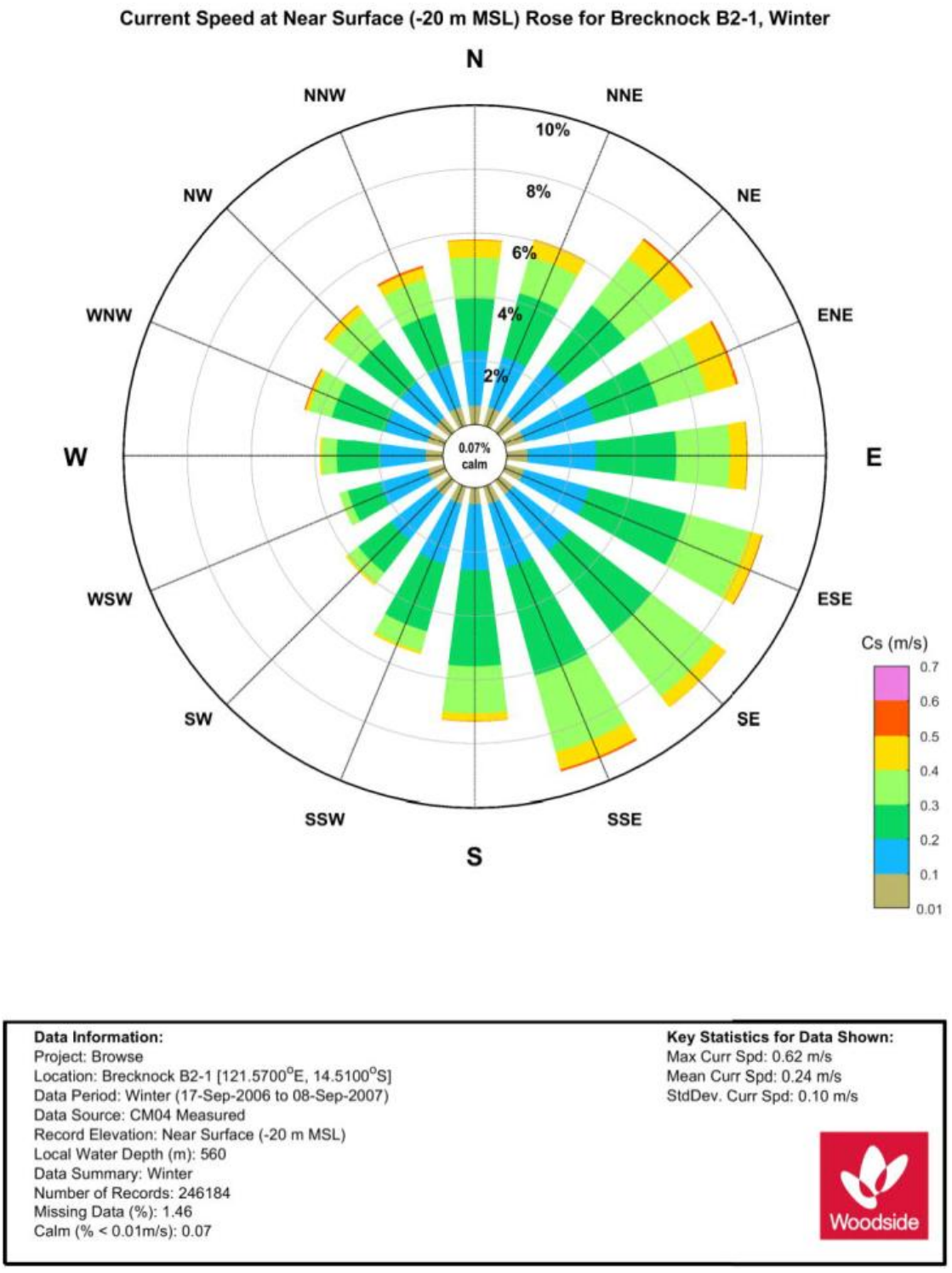


Figure 5: Winter (May to Sep) near-surface combined frequency of one-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd, 2008)

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North West Shelf/Scarborough

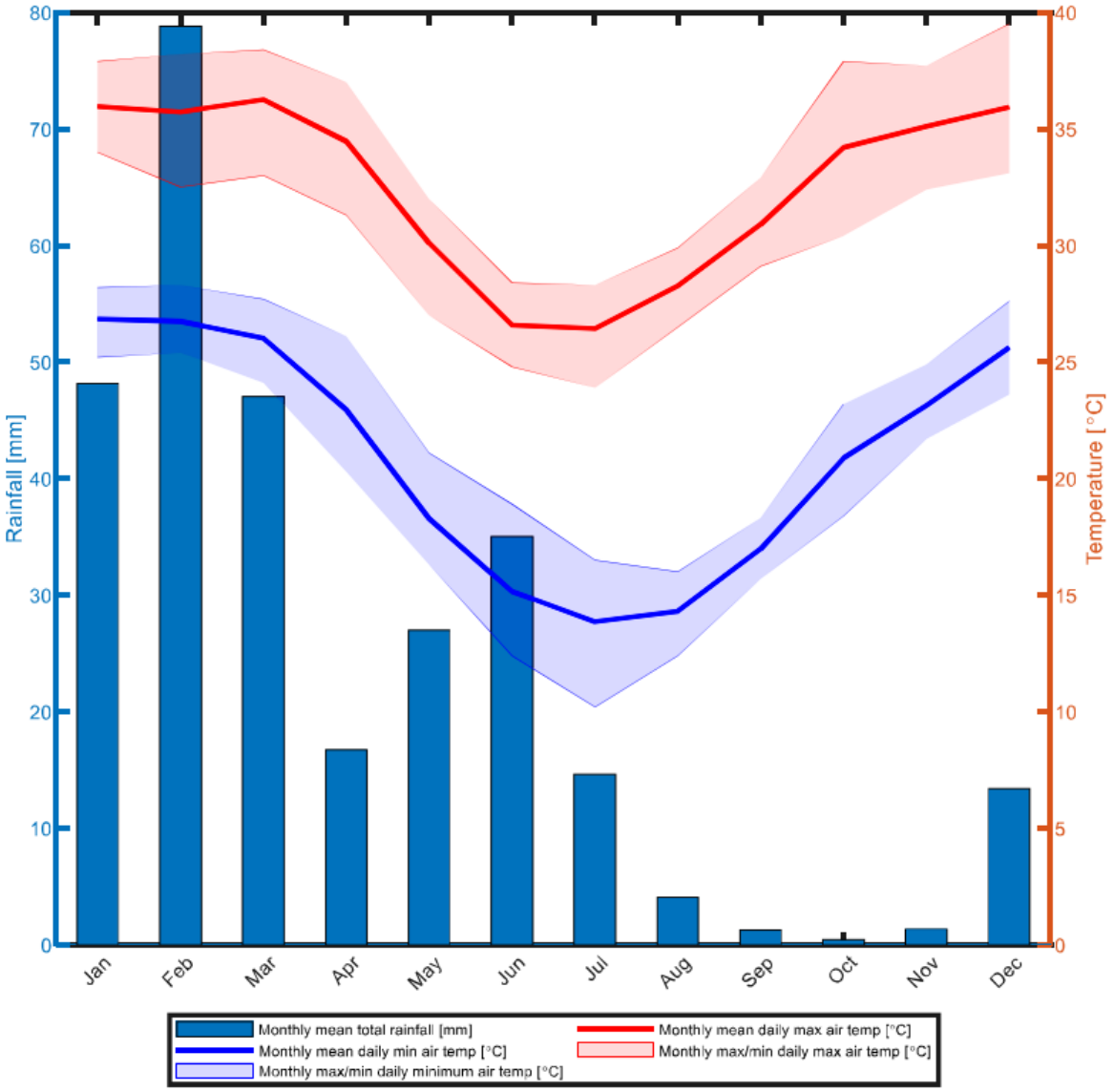


Figure 1: Monthly average total rainfall (mm) and air temperature (°C), calculated based on observations at the Karratha Aero weather station from 1972 to 2020 and 1993 to 2020, respectively (Bureau of Meteorology, 2020)

Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

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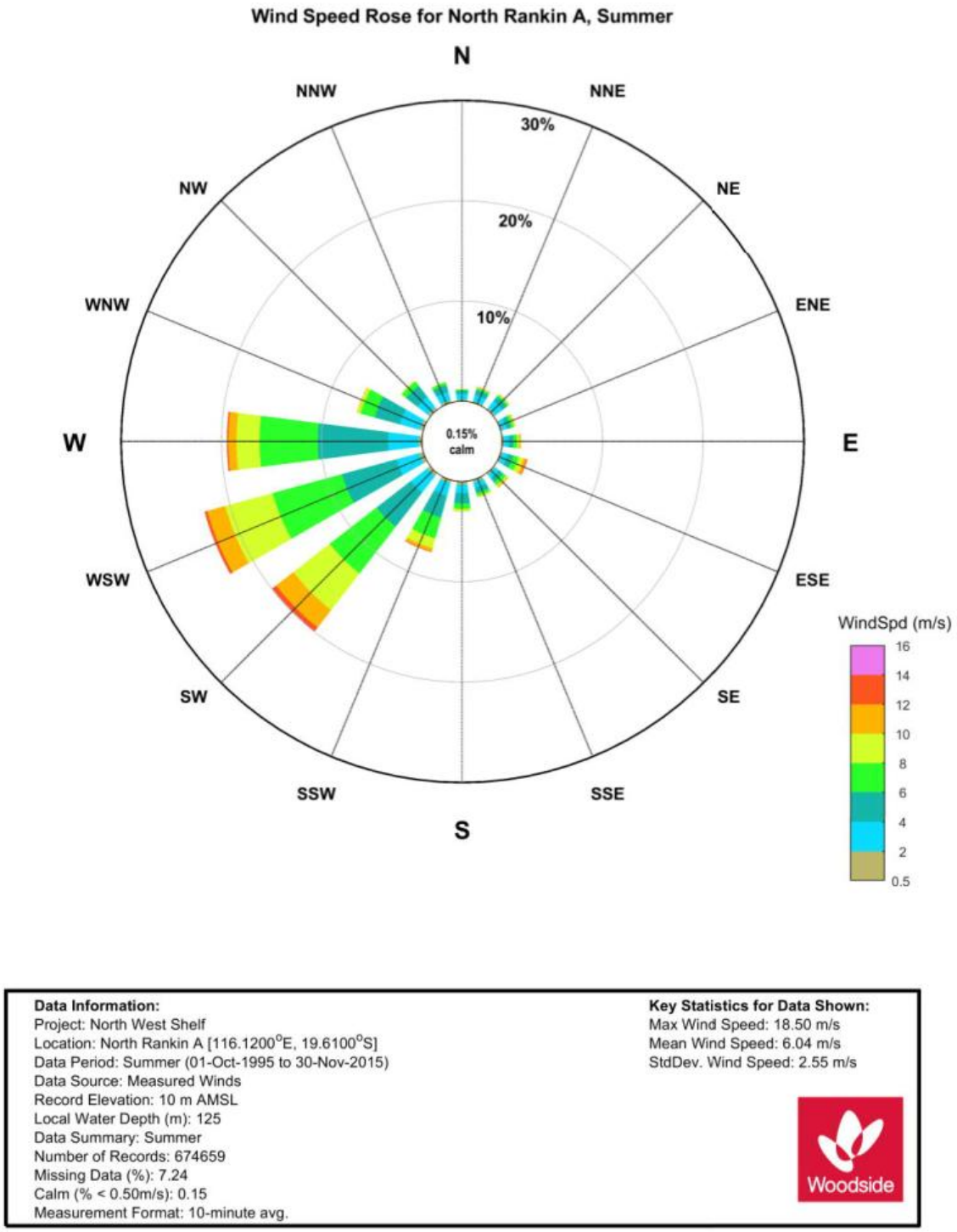
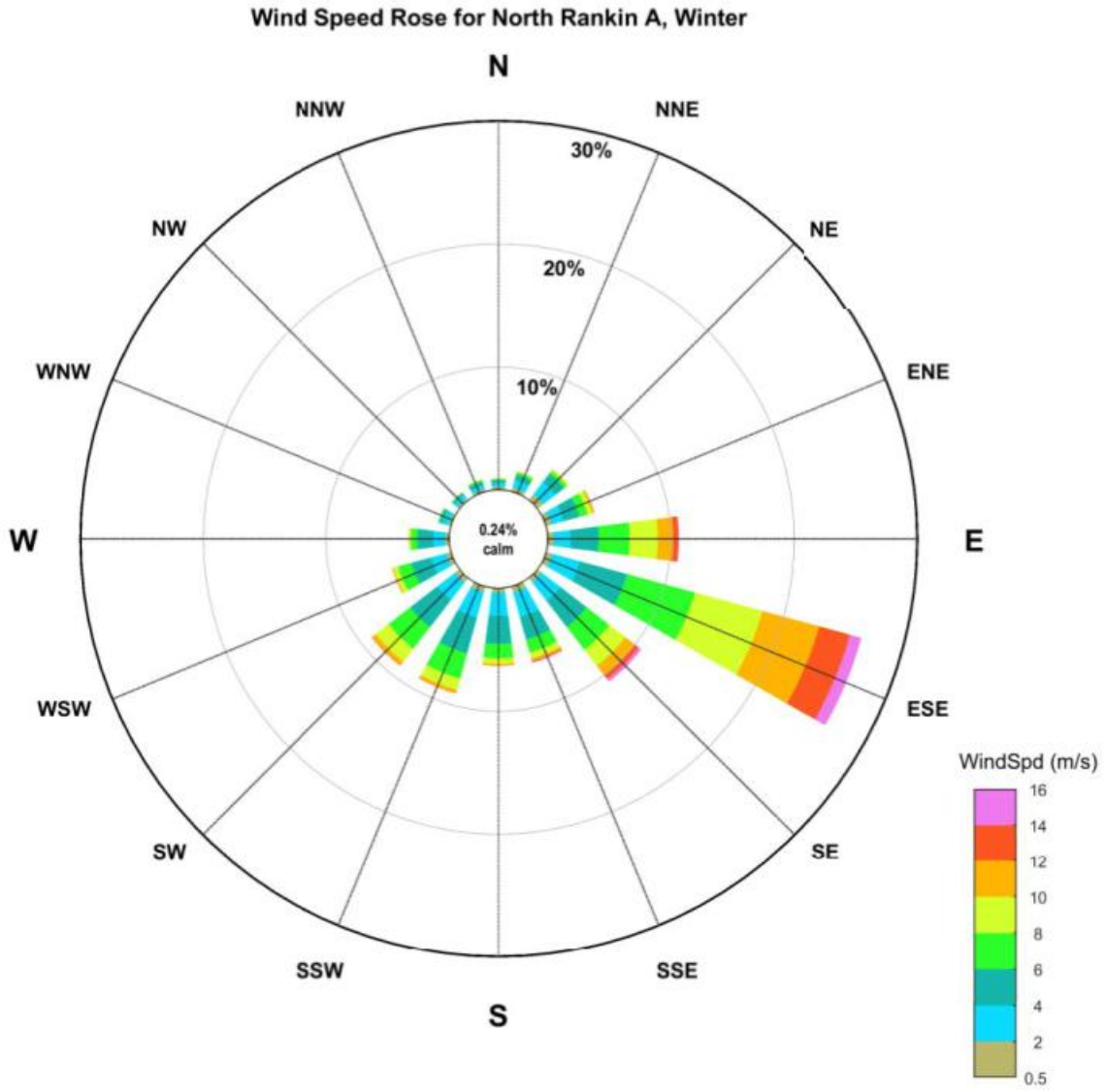


Figure 2: Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (Woodside, 2015)

Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by west to southwest driven by the North West Monsoon (RPS, 2016).

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Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Winter (22-Jun-1995 to 30-Sep-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Winter
Number of Records: 673213
Missing Data (%): 4.43
Calm (% < 0.50m/s): 0.24
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 24.23 m/s
Mean Wind Speed: 6.25 m/s
StdDev. Wind Speed: 3.16 m/s

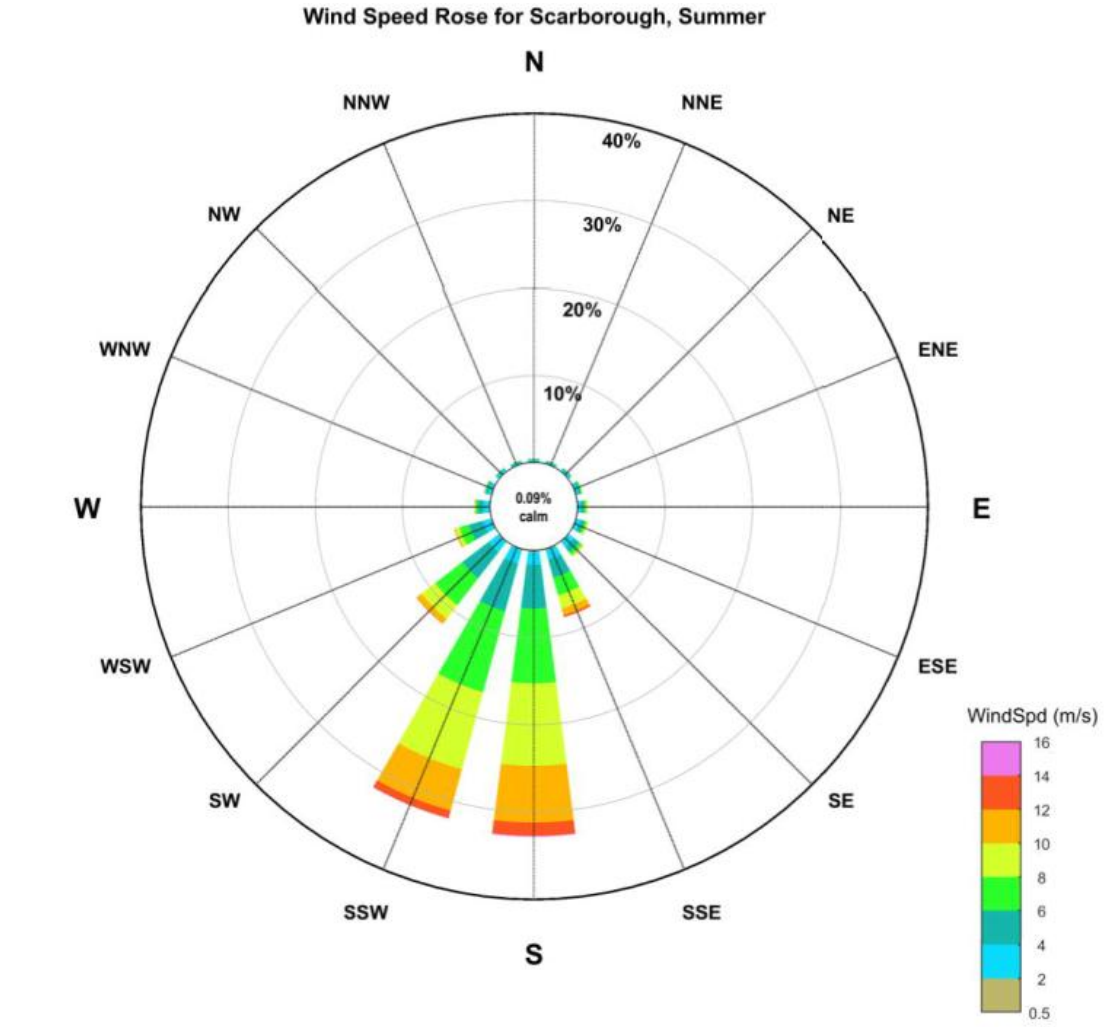
Woodside

Figure 3: Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (Woodside, 2015)

Note, tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

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Scarborough



Data Information:
Project: North West Shelf
Location: Scarborough [113.2000°E, 19.8800°S]
Data Period: Summer (01-Jan-1979 to 01-Jan-2011)
Data Source: CSFR
Record Elevation: 10 m AMSL
Local Water Depth (m): 950
Data Summary: Summer
Number of Records: 129521
Missing Data (%): 7.46
Calm (% < 0.50m/s): 0.09
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 16.75 m/s
Mean Wind Speed: 7.23 m/s
StdDev. Wind Speed: 2.64 m/s

Woodside

Figure 1: Summer distributions of wind speeds (10-minute at 10 m above sea level) by 22.5° directional sectors at the Scarborough site (Woodside, 2018)

Note, tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the south to south-southwest due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8]. Southwest winds are also experienced at this site due to the monsoon trough.

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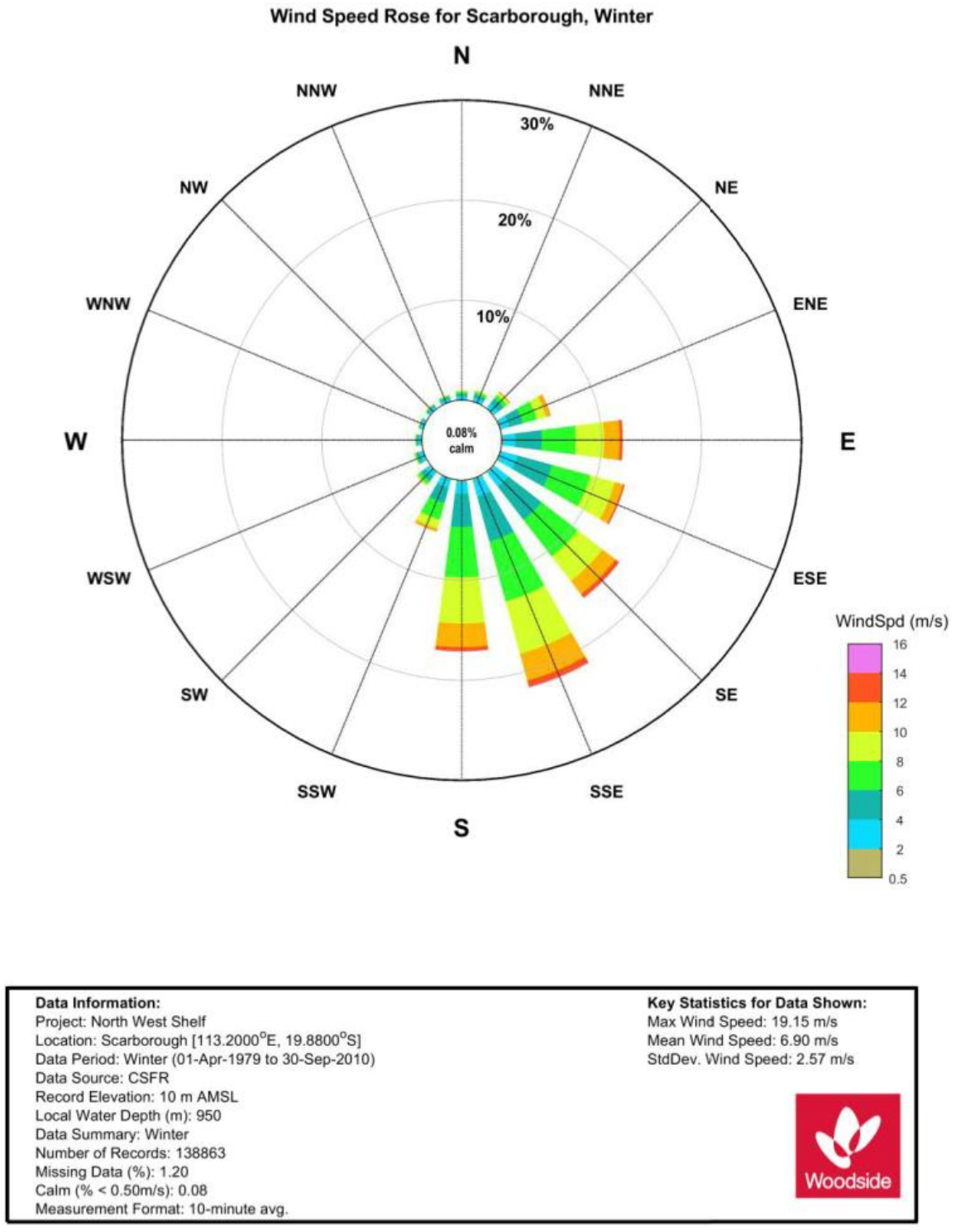


Figure 2: Winter distributions of wind speeds (10-minute at 10 m above sea level) by 22.5° directional sectors at the Scarborough site (Woodside, 2018)

Note, tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the south to east driven by the South East Trade Winds over Australia (RPS, 2016).

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North West Shelf

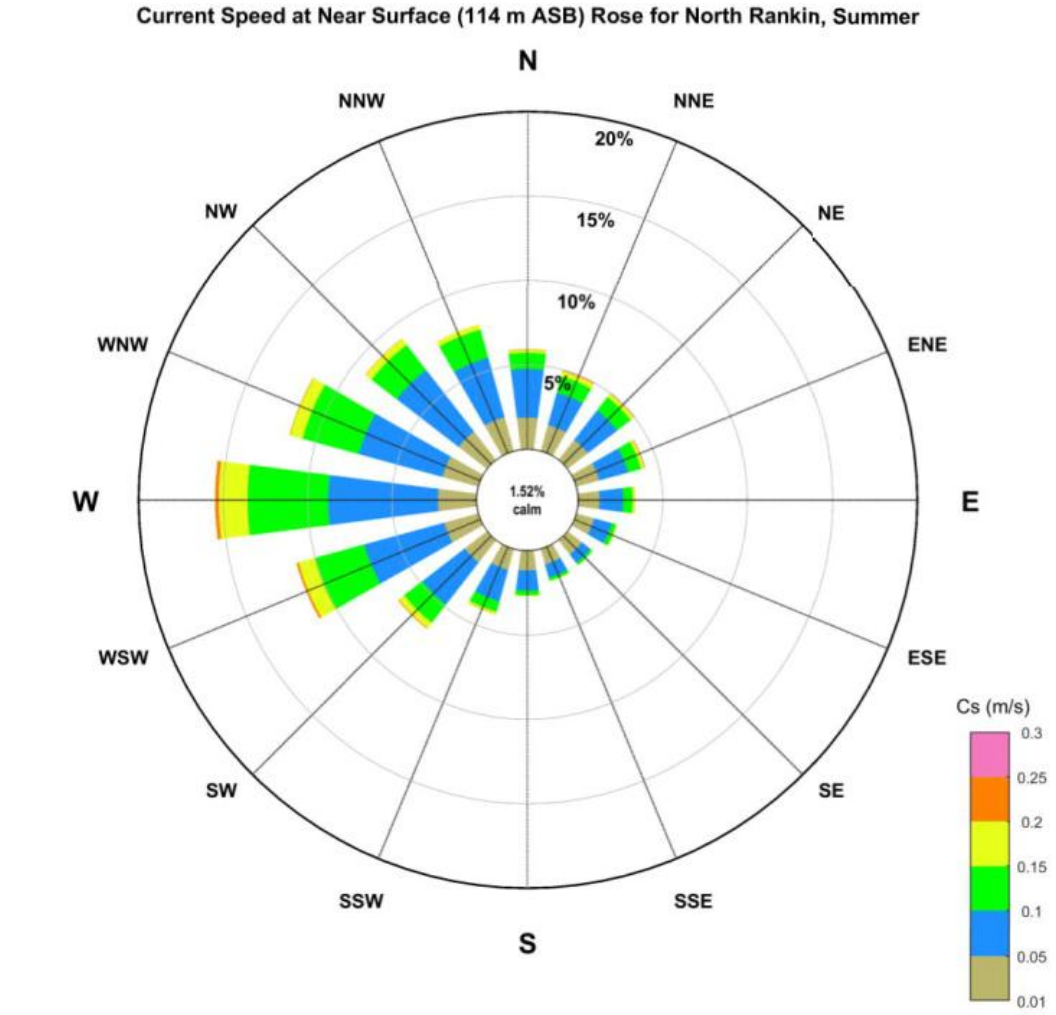


Figure 1: Summer (Nov to Apr) near surface combined frequency of one-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (Woodside, 2011)

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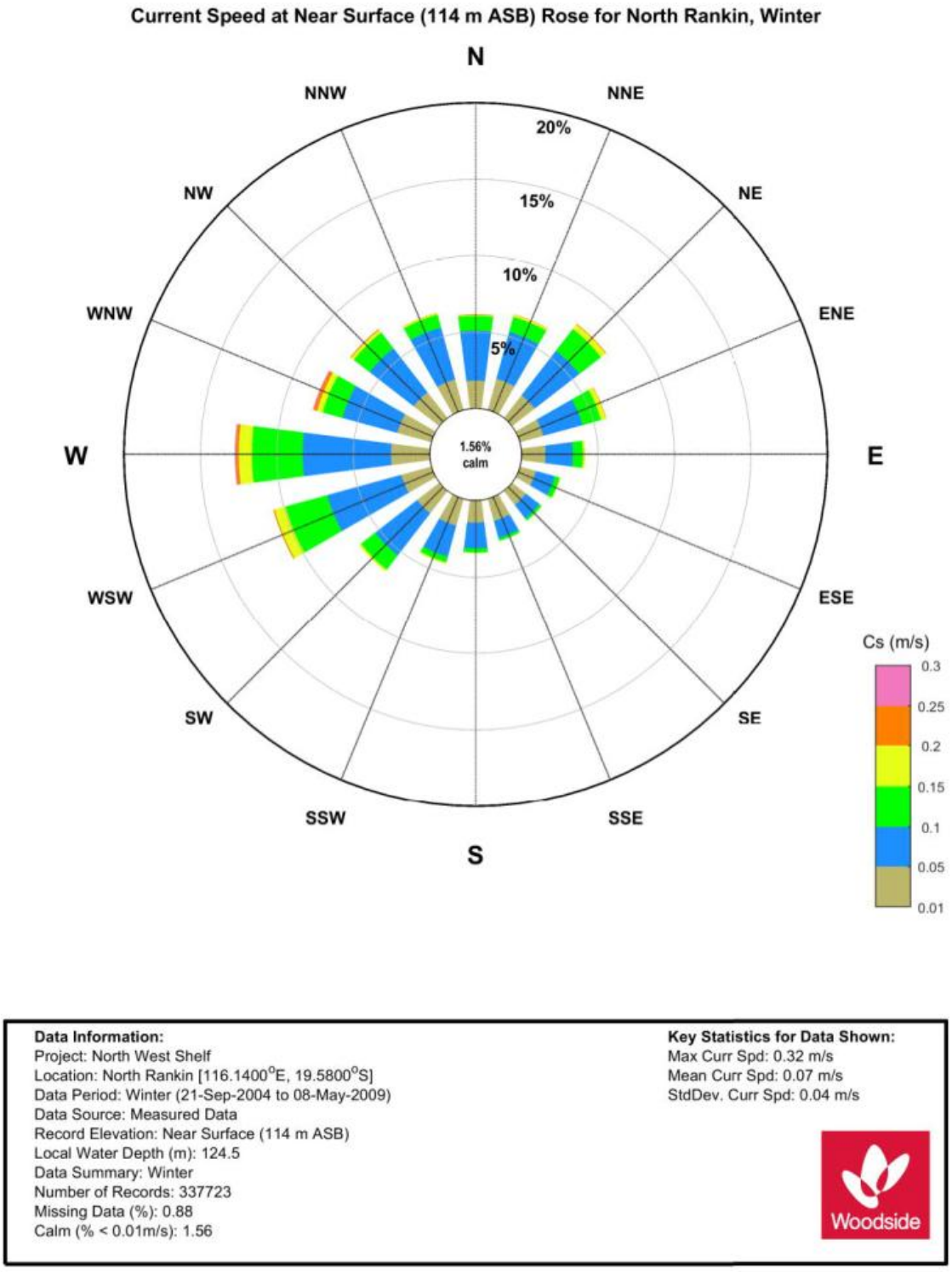


Figure 2: Winter (May to Sep) near surface combined frequency of one-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (Woodside, 2011)

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Scarborough

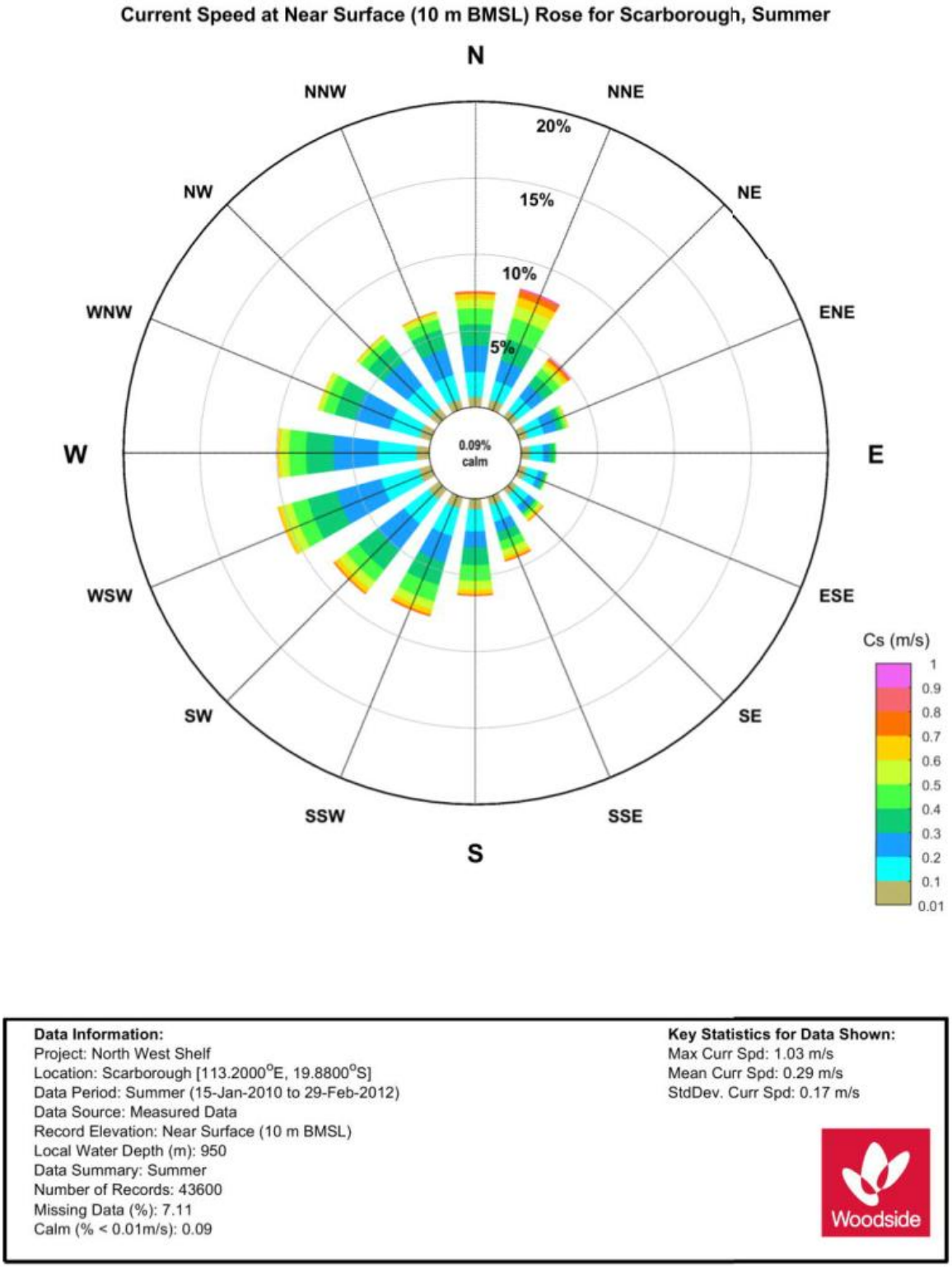


Figure 1: Summer (Nov to Apr) near-surface combined frequency of one-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (Woodside, 2018)

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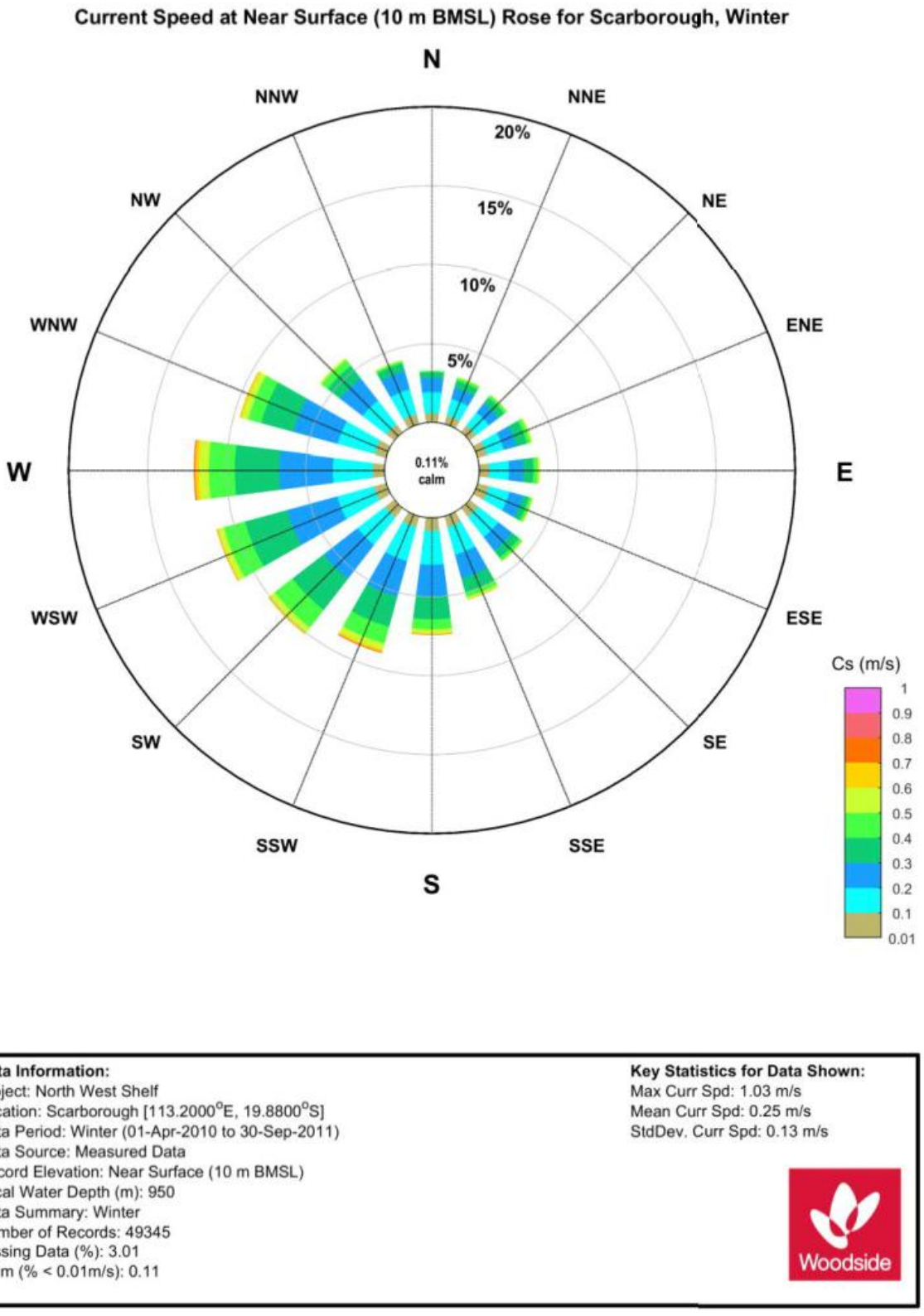


Figure 2: Winter (May to Sep) near-surface combined frequency of one-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (Woodside, 2018)

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North West Cape

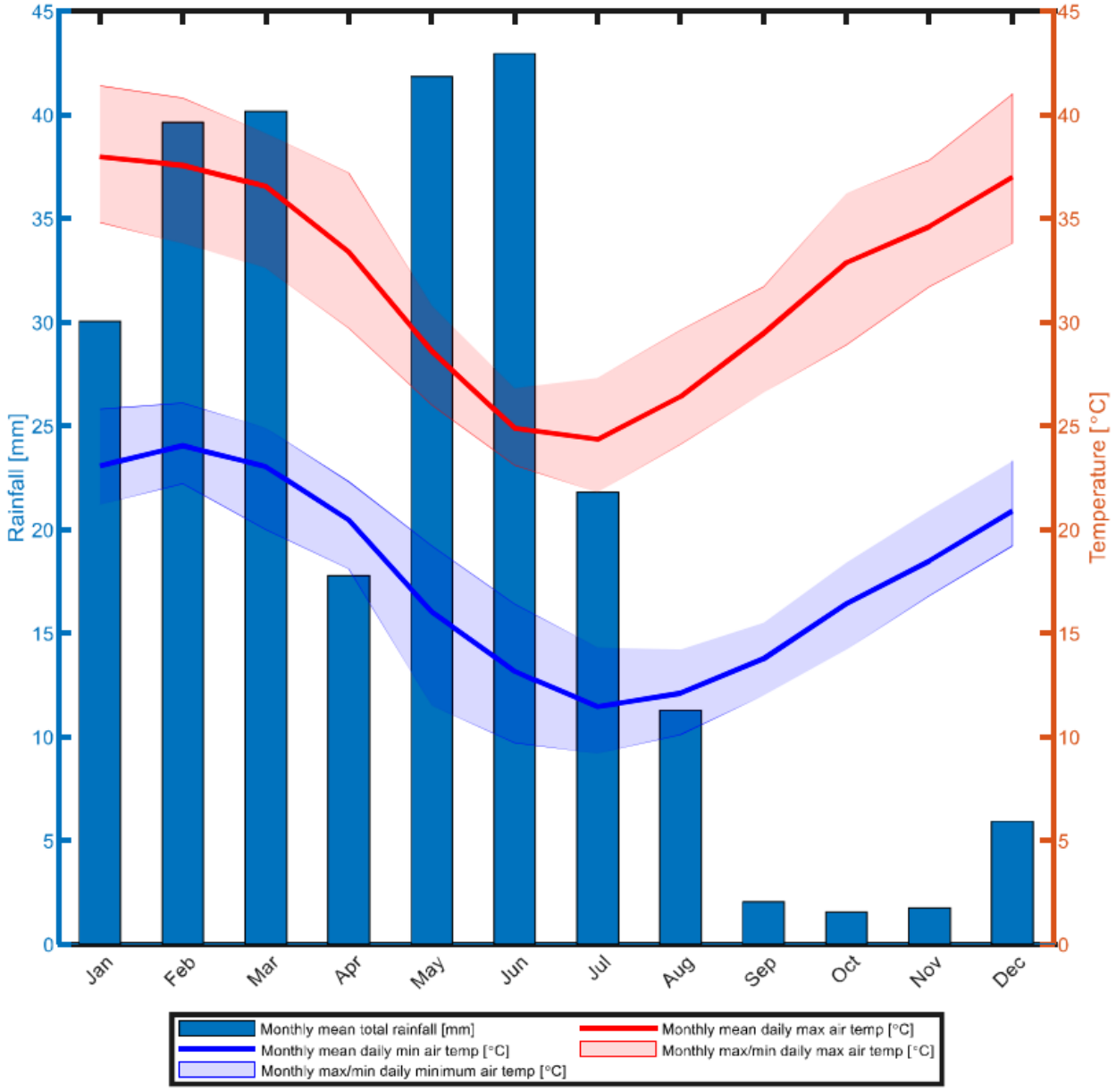
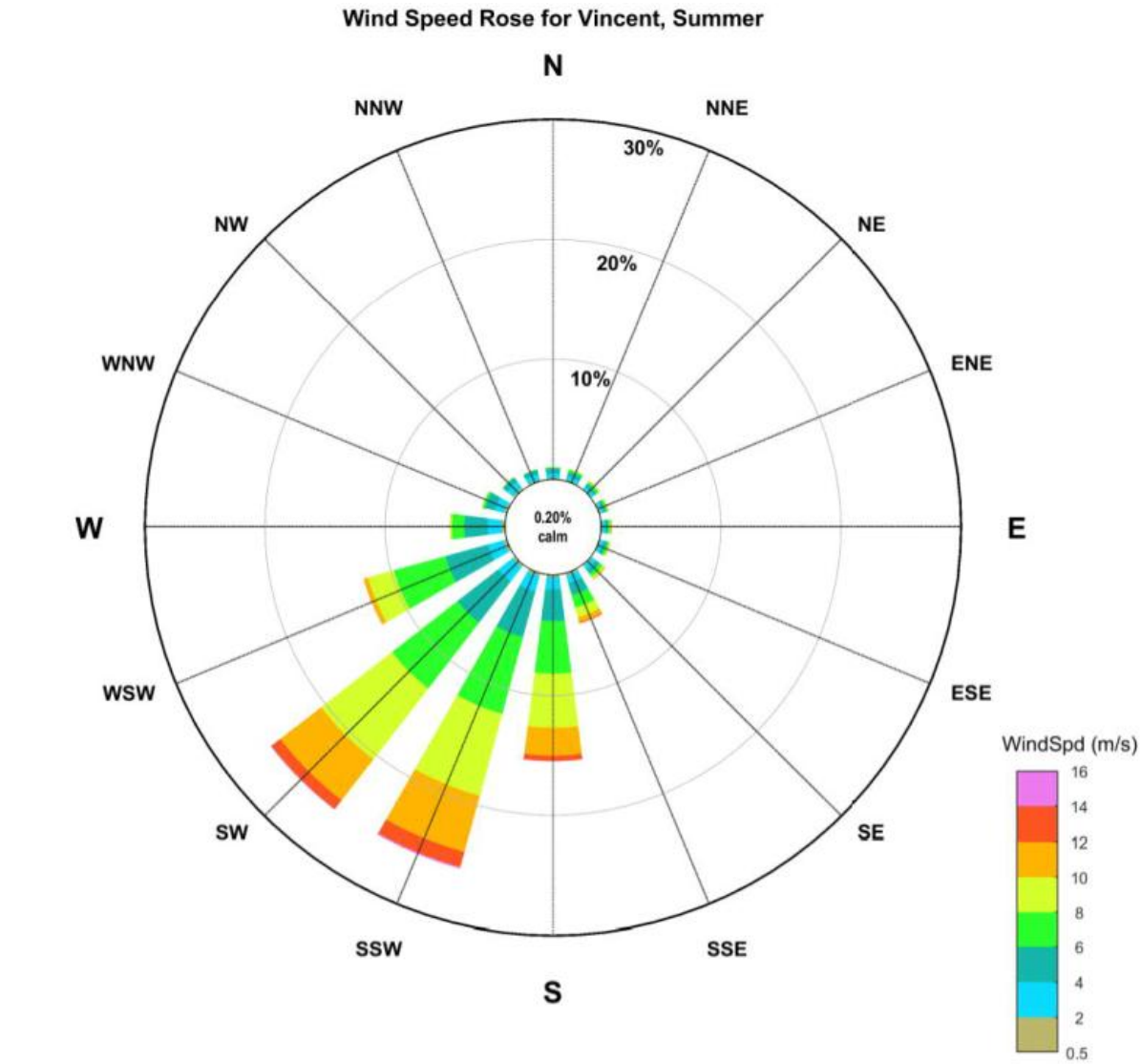


Figure 1: Monthly average total rainfall (mm) and air temperature (°C), calculated based on observations at the Learmonth Airport weather station from 1945 to 2020 and 1975 to 2020, respectively (Bureau of Meteorology, 2020)

Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

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Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Summer (01-Jan-1979 to 01-Jan-2019)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 350
Data Summary: Summer
Number of Records: 159379
Missing Data (%): 8.91
Calm (% < 0.50m/s): 0.20
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 18.86 m/s
Mean Wind Speed: 7.10 m/s
StdDev. Wind Speed: 2.75 m/s

Woodside

Figure 2: Summer distributions of wind speeds (10-minute at 10 m above sea level) by 22.5° directional sectors at the Vincent site (Vincent Metocean)

Note, tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the southwest to south-southwest in summer due to the presence of the Pilbara Heat Low (MetOcean, Engineers 2005)

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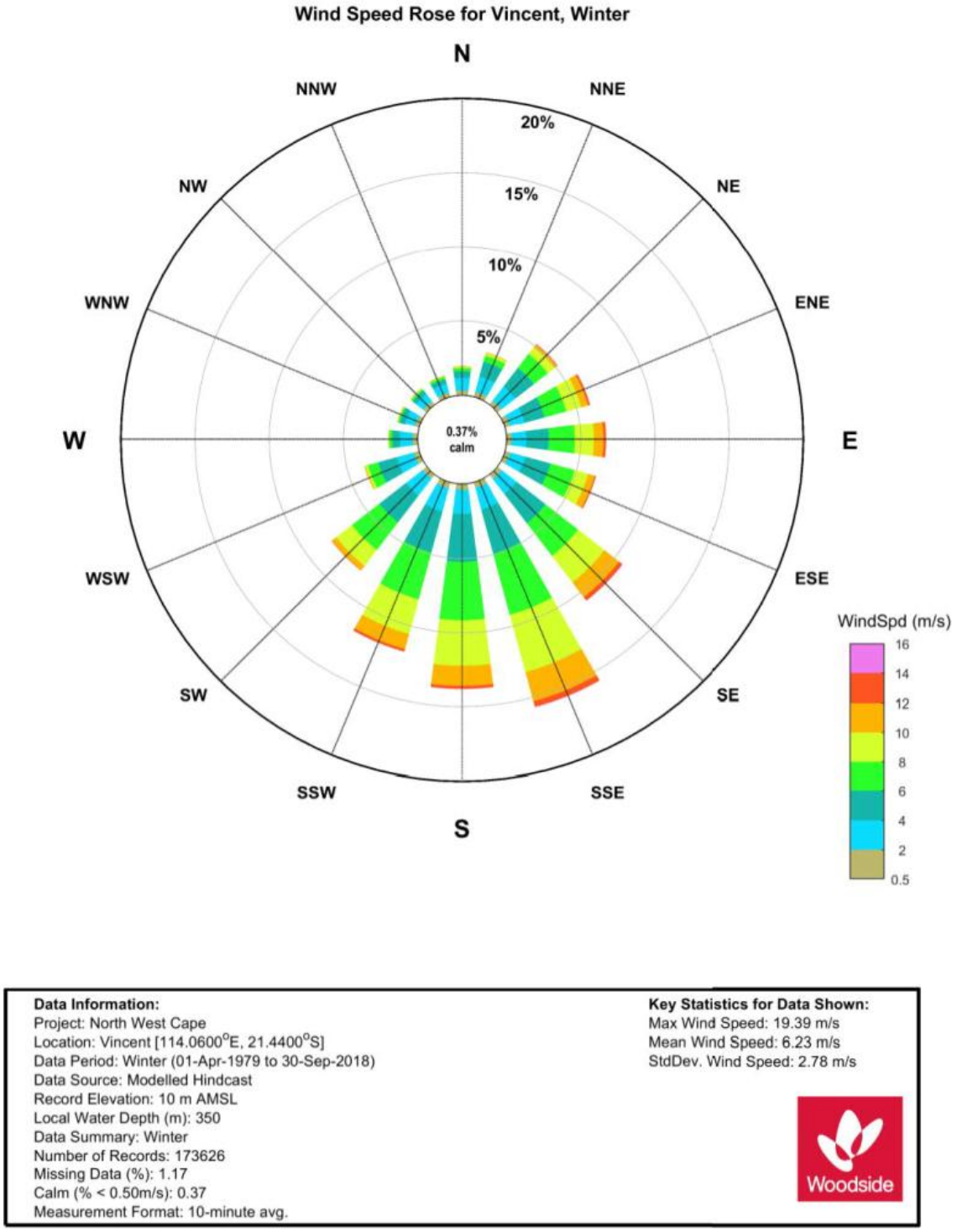


Figure 3: Winter distributions of wind speeds (10-minute at 10 m above sea level) 22.5° directional sectors at the Vincent site (Vincent Metocean)

Note, tropical cyclone events were not included in this distribution. In winter, winds at are predominantly from the south to southeast, associated with the South East Trades. Easterly gales are experienced at the Vincent location due to high pressure systems generating from the Great Australian Bight area to the site (MetOcean Engineers, 2005).

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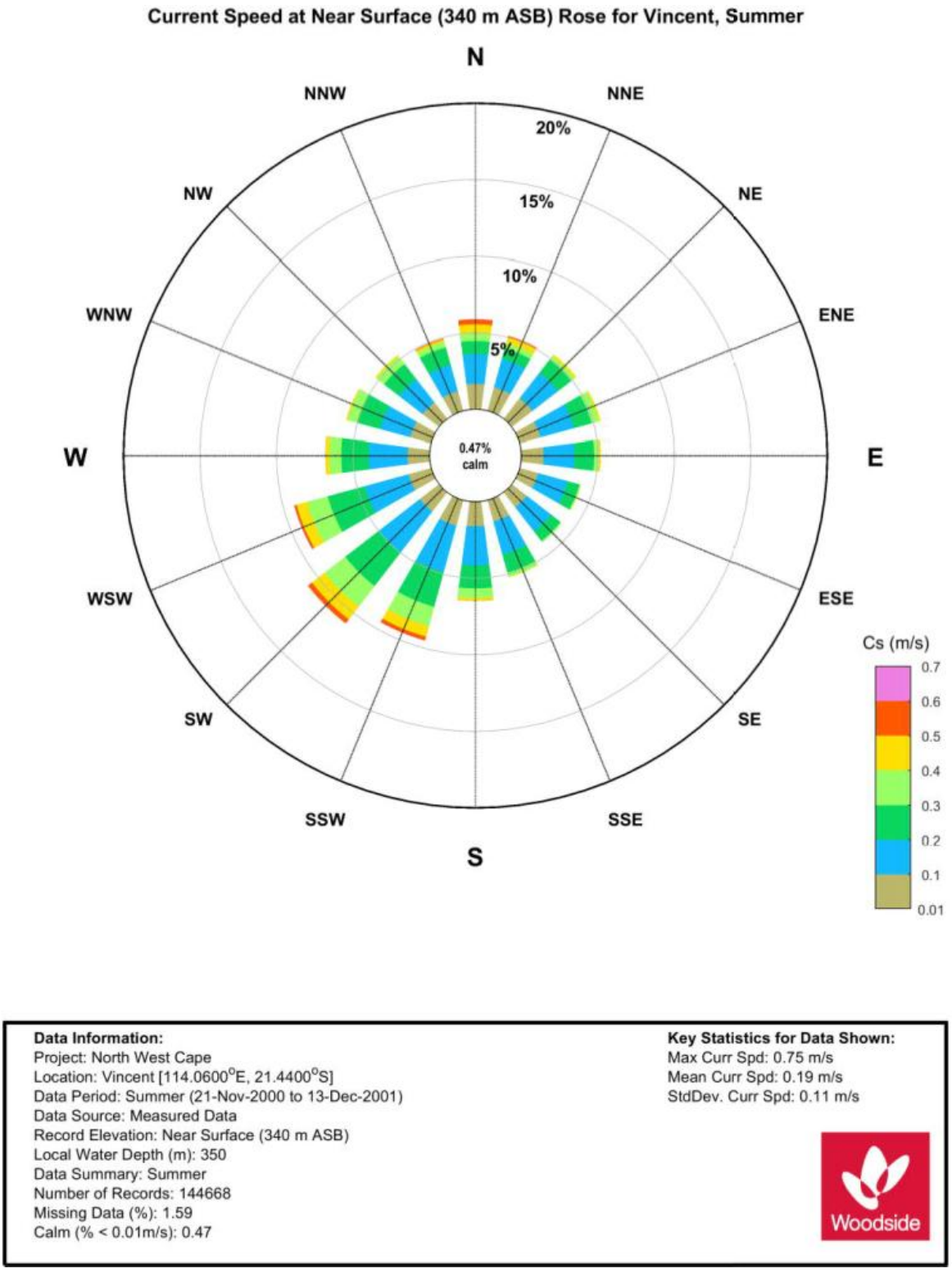


Figure 4: Summer (May to Sep) near-surface combined frequency of one-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (Woodside, 2016)

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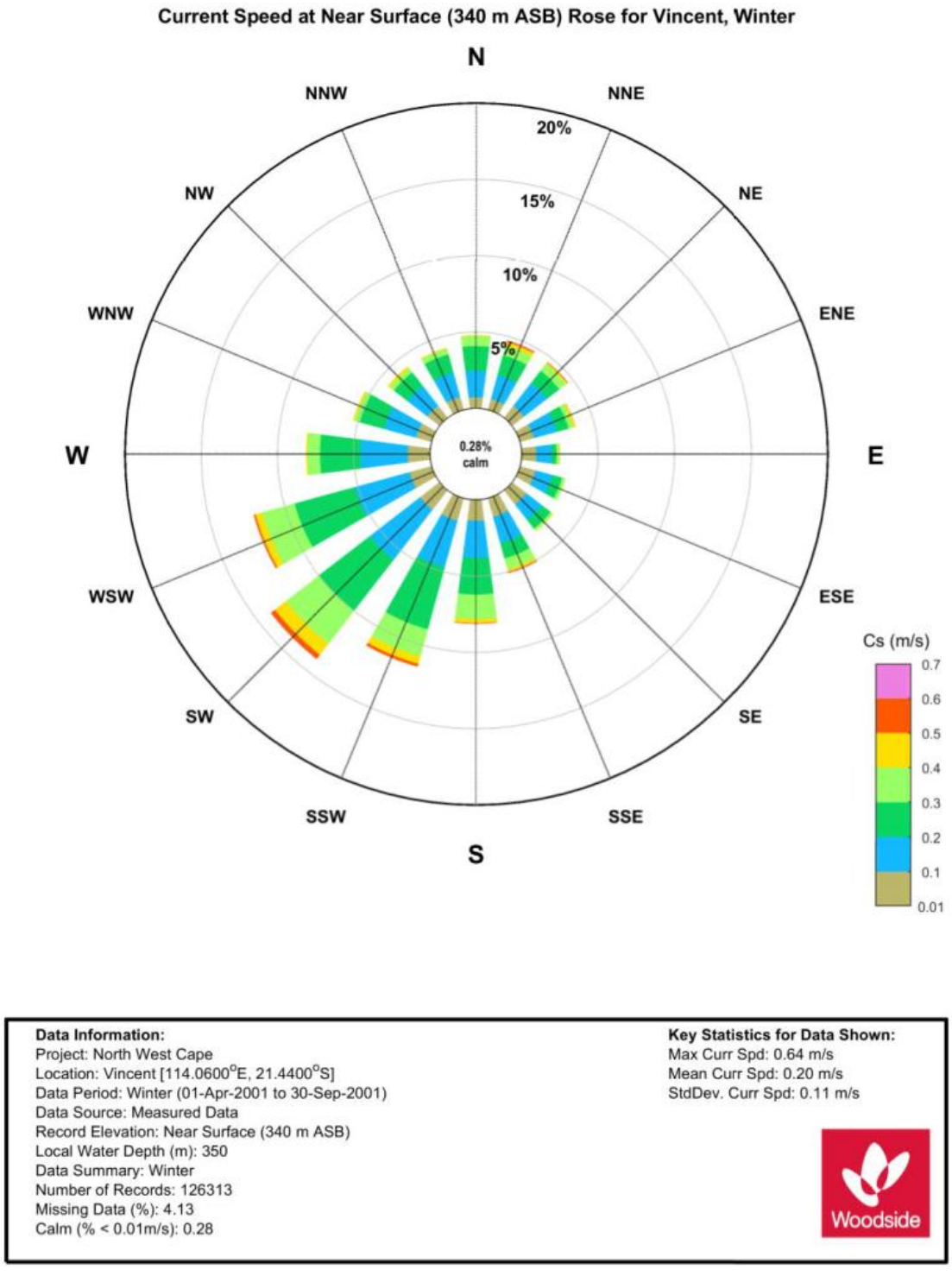


Figure 5: Winter (Nov to Apr) near-surface combined frequency of one-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (Woodside, 2016)

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APPENDIX C SUMMARY OF SEABIRD PRESENCE UPDATES FOR 2026 REVIEW

Table 1 presents a list of the low occurrence threatened and migratory seabird and shorebird species as identified in the PMST that occur within the NWMR.

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Table 1: Low occurrence seabird and migratory shorebird species (threatened/migratory) identified by the EPBC Act PMST report as potentially occurring within the NWMR

Common name	Scientific name	EPBC Act (Commonwealth) (as per PMST report in Appendix A	2024 occurrence value	2026 occurrence value	Description of change
Abbott's booby	*Papasula abbotti*	Endangered	Low	Low	No observed changes between 2024 and 2026
Black-browed albatross	*Thalassarche melanophris*	Vulnerable Migratory	Low	Low	No observed changes between 2024 and 2026
Campbell albatross, Campbell black-browed albatross	*Thalassarche impavida*	Vulnerable Migratory	Low	Low	No observed changes between 2024 and 2026
Indian yellow-nosed albatross	*Thalassarche carteri*	Vulnerable Migratory	Low	Low	No observed changes between 2024 and 2026
Night parrot	*Pezoporus occidentalis*	Critically Endangered	Low	Low	No observed changes between 2024 and 2026
Northern giant petrel	*Macronectes halli*	Vulnerable Migratory	Low	Low	No observed changes between 2024 and 2026
Nunivak bar-tailed godwit, western Alaskan bar-tailed godwit	*Limosa lapponica baueri*	Endangered	Low	Low	No observed changes between 2024 and 2026
Princess parrot, Alexandra's parrot	*Polytelis alexandrae*	Vulnerable	Low	Low	No observed changes between 2024 and 2026
Red-rumped swallow	*Cecropis daurica*	Migratory	Low	Low	No observed changes between 2024 and 2026
Shy albatross	*Thalassarche cauta*	Endangered Migratory	Low	Low	No observed changes between 2024 and 2026
Southern giant-petrel, southern giant petrel	*Macronectes giganteus*	Endangered Migratory	Low	Low	No observed changes between 2024 and 2026
Wandering albatross	*Diomedea exulans*	Vulnerable Migratory	Low	Low	No observed changes between 2024 and 2026
White-capped albatross	*Thalassarche steadi*	Vulnerable Migratory	Low	Low	No observed changes between 2024 and 2026

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APPENDIX D EPBC ACT PROTECTED MATTERS SEARCH TOOL RESULTS

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 29-Jun-2026

[Summary](#)
[Details](#)
- [Matters of NES](#)
- [Other Matters Protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgements](#)

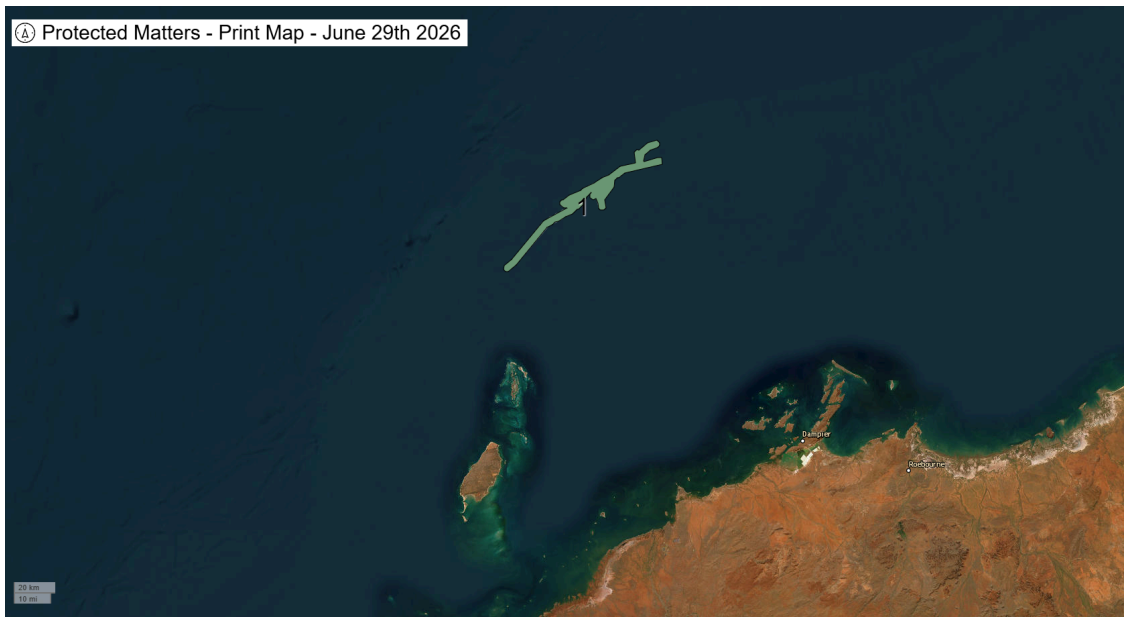


Figure 1: Goodwyn Alpha Facility Operations Environment Plan - Operational Area

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	27
Listed Migratory Species:	43

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	72
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	48
Key Ecological Features (Marine):	2
Biologically Important Areas:	7
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		

Scientific Name	Threatened Category	Presence Text
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Fish		
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Idiotropiscis larsonae as Acentronura larsonae Helen's Pygmy Pipehorse [74959]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Montebello	Multiple Use Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Seismic Survey	2008/4219	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas		
Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Reproduction	Known to occur
Natator depressus		
Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae		
Humpback Whale [38]	Migration	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

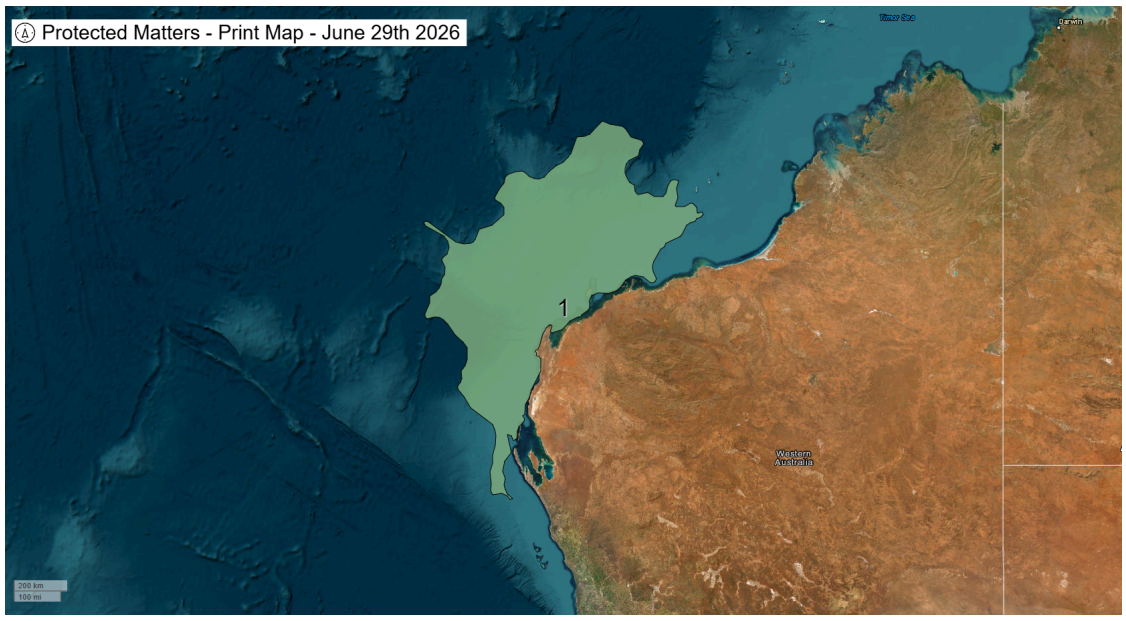


Figure 1: Goodwyn Alpha Facility Operations Environment Plan - EMBA

Report created: 29-Jun-2026

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	3
National Heritage Places:	3
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	3
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	72
Listed Migratory Species:	72

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	18
Commonwealth Heritage Places:	2
Listed Marine Species:	125
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	14
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	39
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	223
Key Ecological Features (Marine):	7
Biologically Important Areas:	30
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
Murujuga Cultural Landscape	WA	Declared property
Ningaloo Coast	WA	Declared property
Shark Bay, Western Australia	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
CRUSTACEAN		
[Kumonga exleyi](#) Cape Range Remipede [86875]	Vulnerable	Species or species habitat likely to occur within area
FISH		
[Milyeringa justitia](#) Barrow Cave Gudgeon [86867]	Endangered	Species or species habitat likely to occur within area
[Milyeringa veritas](#) Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat likely to occur within area
[Ophisternon candidum](#) Blind Cave Eel [66678]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia lesueur Barrow and Boodie Islands subspecies Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Translocated population known to occur within area
Bettongia lesueur lesueur Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus barrowensis Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Translocated population known to occur within area
Lagorchestes conspicillatus conspicillatus Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Translocated population known to occur within area
Lagorchestes hirsutus bernieri Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Species or species habitat likely to occur within area
Lagorchestes hirsutus Central Australian subspecies Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area

Scientific Name	Threatened Category	Presence Text
[Lagorchestes hirsutus dorreae](#)		
Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Species or species habitat likely to occur within area
[Lagostrophus fasciatus fasciatus](#)		
Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Species or species habitat likely to occur within area
[Orcaella heinsohni](#)		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
[Osphranter robustus isabellinus](#)		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
[Perameles bougainville](#)		
Shark Bay Bandicoot [278]	Endangered	Species or species habitat likely to occur within area
[Petrogale lateralis lateralis](#)		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat likely to occur within area
[Pseudomys fieldi](#)		
Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely to occur within area
[Rhinonicteris aurantia (Pilbara form)](#)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis](#)		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Aipysurus apraefrontalis](#)		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus foliosquama](#)		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Ctenotus zastictus Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Liasis olivaceus barroni Pilbara Olive Python [66699]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area
Centrophorus uyato Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica		
Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Bureau of Meteorology	
Lot 1102 P217148 [AGPR5866]	WA
Lot 819 P211578 [AGPR5865]	WA
Lot 973 P216414 [AGPR5863]	WA
Department of Climate Change, Energy, the Environment and Water	

Commonwealth Land Name	State
Learmonth Air Weapons Range Facility [CHL_105551]	WA
Ningaloo Marine Area - Commonwealth Waters [CHL_105548]	WA
Department of Defence	
Exmouth Area A VLF Transmitter Station [DD_0083]	WA
Exmouth Area B Admin and HF Transmitter [DD_0082]	WA
Exmouth RAAF Radar Site Twin Tanks [DD_0973]	WA
Exmouth RAAF Radar Site - Vlaming Head [DD_0974]	WA
Learmonth Air Weapons Range [DD_0961]	WA
Learmonth RAAF base [AGPR4466]	WA
Learmonth RAAF base [AGPR4419]	WA
Learmonth RAAF base [AGPR4413]	WA
Learmonth RAAF base [AGPR4415]	WA
Learmonth RAAF base [AGPR4416]	WA
Learmonth RAAF base [AGPR4418]	WA
Learmonth RAAF base [AGPR4417]	WA
Learmonth RAAF base [AGPR4467]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding likely to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within area
Larus pacificus Pacific Gull [811]		Breeding likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Breeding likely to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Breeding likely to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Idiotropiscis larsonae as Acentronura larsonae Helen's Pygmy Pipehorse [74959]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Nannocampus subosseus](#) Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
[Phoxocampus belcheri](#) Black Rock Pipefish [66719]		Species or species habitat may occur within area
[Solegnathus hardwickii](#) Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
[Solegnathus lettiensis](#) Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
[Solenostomus cyanopterus](#) Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
[Stigmatopora argus](#) Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Species or species habitat likely to occur within area
Reptile		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area
[Balaenoptera bonaerensis](#) Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Dampier	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Dampier	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)
Dampier	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Nov-Feb		
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Oct - Mar		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bernier And Dorre Islands	Nature Reserve	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range	National Park	WA
Cape Range (South)	National Park	WA
Gnandaroo Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Koks Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
Rocky Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Tent Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA37383	5(1)(h) Reserve	WA
Unnamed WA37500	5(1)(g) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Victor Island	Nature Reserve	WA
Y Island	Nature Reserve	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status

Title of referral	Reference	Referral Outcome	Assessment Status
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778		Completed
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081		Completed
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval
North West Shelf Project Extension, Carnarvon Basin, WA	2018/8335		Approval
Offshore Dredge Spoil Disposal - Mardie Project	2024/10054		Referral Decision
Project Highclere Cable Lay and Operation	2022/09203		Completed
Single Jetty Deep Water Port Renewable Hub, WA	2021/8942		Assessment
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Boating Facility	2002/830	Controlled Action	Completed
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Construction and operation of a Solar Salt Project, SW Onslow, WA	2016/7793	Controlled Action	Assessment Approach

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Eramurra Industrial Salt Project	2021/9027	Controlled Action	Assessment Approach
Eramurra Industrial Salt Project, near Karratha, WA	2019/8448	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
Mauds Landing Marina	2000/98	Controlled Action	Completed
Pluto Gas Project	2005/2258	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Simpson Development	2000/59	Controlled Action	Completed
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Boating Facility	2002/832	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Development of iron ore facilities	2013/7013	Not Controlled Action	Completed
Differential Global Positioning System (DGPS)	2001/445	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Extension of Simpson Oil Platforms & Wells	2002/685	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Mahimahi Aquaculture Facility	2002/891	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA	2014/7160	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Port Walcott upgrade, dredging & spoil disposal, & channel realignment	2006/2806	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Repsol 3d & 2D Marine Seismic Survey	2012/6658	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Scarborough Development nearshore component, NWS, WA	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west
Glomar Shoals	North-west
Western demersal slope and associated fish communities	South-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon		
Dugong [28]	Foraging	Known to occur
Dugong dugon		
Dugong [28]	Reproduction	Known to occur
Marine Turtles		
Caretta caretta		
Loggerhead Turtle [1763]	Reproduction	Low density

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Migration	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Chelonia mydas Green Turtle [1765]	Resting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Migration	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Migration	Known to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Reproduction	Known to occur
Onychoprion anaethetus Bridled Tern [82845]	Foraging	Likely to occur

Scientific Name	Behaviour	Presence
Onychoprion fuscatus Sooty Tern [90682]	Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Sternula nereis Fairy Tern [82949]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Likely to be present
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Eubalaena australis Southern Right Whale [40]	Migration	
Eubalaena australis Southern Right Whale [40]	Reproduction	
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX E NOPSEMA REPORT FORMS

NOPSEMA Recordable Environmental Incident Monthly Reporting Form:

Monthly Environmental Incident Reports form (A198750).docx

Report of an Accident, Dangerous Occurrence or Environmental Incident:

Form - Report of an Accident Dangerous Occurrence or Environmental Incident (A159980).docx

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APPENDIX F STAKEHOLDER CONSULTATION

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Appendix F: Goodwyn Alpha Facility Operations Environment Plan

August 2026

Revision 0

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1. CONSULTATION APPROACH

Consultation under regulation 25 of the OPGGS(E) Regulations provides that, in the course of preparing an Environment Plan (EP), a titleholder must consult each relevant person (regulation 25(1)), must give each relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person (regulation 25(2)), and must allow a relevant person a reasonable period for consultation (regulation 25(3)).

A titleholder must also give a relevant person a reasonable opportunity to consult – this means that a titleholder will need to demonstrate that what it did constituted consultation appropriate and adapted to the nature of the interests of the relevant person (see Tipakalippa Full Court paragraph 104). The EP must contain a report on all consultations that contains an assessment of the merits of any objection or claim about the adverse impact of each activity to which the EP relates, and a statement of the titleholder's response, or proposed response, if any, to each objection or claim (regulation 24(b)).

The criteria for acceptance of an EP includes that the EP demonstrates that the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate (regulation 34(g)).

For the Goodwyn Alpha (GWA) Facility Operations EP, Woodside has taken a broad and proactive consultation approach over a period of three months, including by:

- Allowing a 30-day consultation in line with Woodside's methodology.
- Providing sufficient information adapted to the nature of each relevant person.
- Engaging in proactive activities to raise awareness of the consultation process and opportunity for relevant persons to provide feedback.
- Actively inviting participation in the consultation process.

  This approach was aimed at raising public awareness of the consultation opportunity and to enable self-identification. It included:

  – a social media campaign
  – advertising in national, state, regional and Indigenous newspapers
  – attendance at community events.

The consultation approach discharges regulation 25 of the Environment Regulations' requirements. The approach is proactive, extended, has enabled self-identification, and has raised broad awareness of Woodside's activities to be carried out under this EP.

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1.1 Woodside's approach to consultation



Woodside's consultation approach consistent with regulation 25 includes:

- Assessment and identification of relevant persons
- Opportunities for relevant person self-identification through national, state, regional and Indigenous print advertising and regional social media campaign
- Two-way communication through emails, in-person meetings and phone calls
- Follow-up if Woodside considers it is required prior to consultation close
- Sufficient information and a reasonable period of time for consultation (see Section 5 of the EP).

Proactive activities to raise consultation awareness includes:

- Community events and engagement
- Local print advertising
- Website and social media
- Community newsletters
- Community bulletin board posting
- Additional supporting campaigns as needed.

1.2 Traditional Custodian consultation approach

Woodside has meaningful long-term relationships with relevant Traditional Custodians specifically tailored to provide for effective engagement which is continuous and is not confined to individual EPs, instead covering all EPs and other issues that are relevant at the time of engagement.

To this end, consultation on any particular EP, including the GWA Facility Operations EP, happens before, during and after the designated consultation period in a more holistic manner allowing for an understanding of the bigger picture and accommodating cultural requirements. Ongoing consultation remains an important part of consulting with Traditional Custodians based on availability, cultural protocols and the preferred method of consultation for each relevant person.

1.3 NGO consultation approach

Woodside has an established history of consulting with environmental non-government organisations (NGOs) as part of its EP consultation process. In its methodology (Section 5.3.4, Table 5-2 of the EP), NGOs are considered "Other non-government groups or organisations" and "Research institutes and local conservation groups or organisations". Relevant person identification for these categories is based on registered non-government groups or organisations with current targeted public website material specific to the proposed activity at the time of developing the EP and who have demonstrated functions, interests or activities relevant to the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation.

So that NGOs were given sufficient information and a reasonable period of time to consult, Woodside:

- advertised the consultation period (social and traditional media)

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- directly consulted NGOs
- participated in regional community events (which were advertised) in the Pilbara which could be attended by any NGOs including local groups. If NGOs attended these sessions, they did not identify themselves.

1.4 NGO response

Woodside consulted eight NGOs for this EP. One response was received which advised the organisation was not intending to provide feedback at this time but may in the future. No other responses were received despite follow-up.

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2. RELEVANCY ASSESSMENT

2.1 Assessment of relevant persons for the proposed activity

The result of Woodside's assessment of relevant persons in accordance with regulation 25(1) of the Environment Regulations is outlined below at Table 1 and Table 2.

Persons or organisations that Woodside assessed as not relevant but nonetheless chose to contact at its discretion in accordance with Section 5.3.7 of the EP or self-identified and Woodside assessed as not relevant are summarised below at Table 1 and Table 3.

As per Woodside's methodology (Section 5 of the EP), assessment of relevant persons is informed by the EMBA, shown in Figure 2-1.

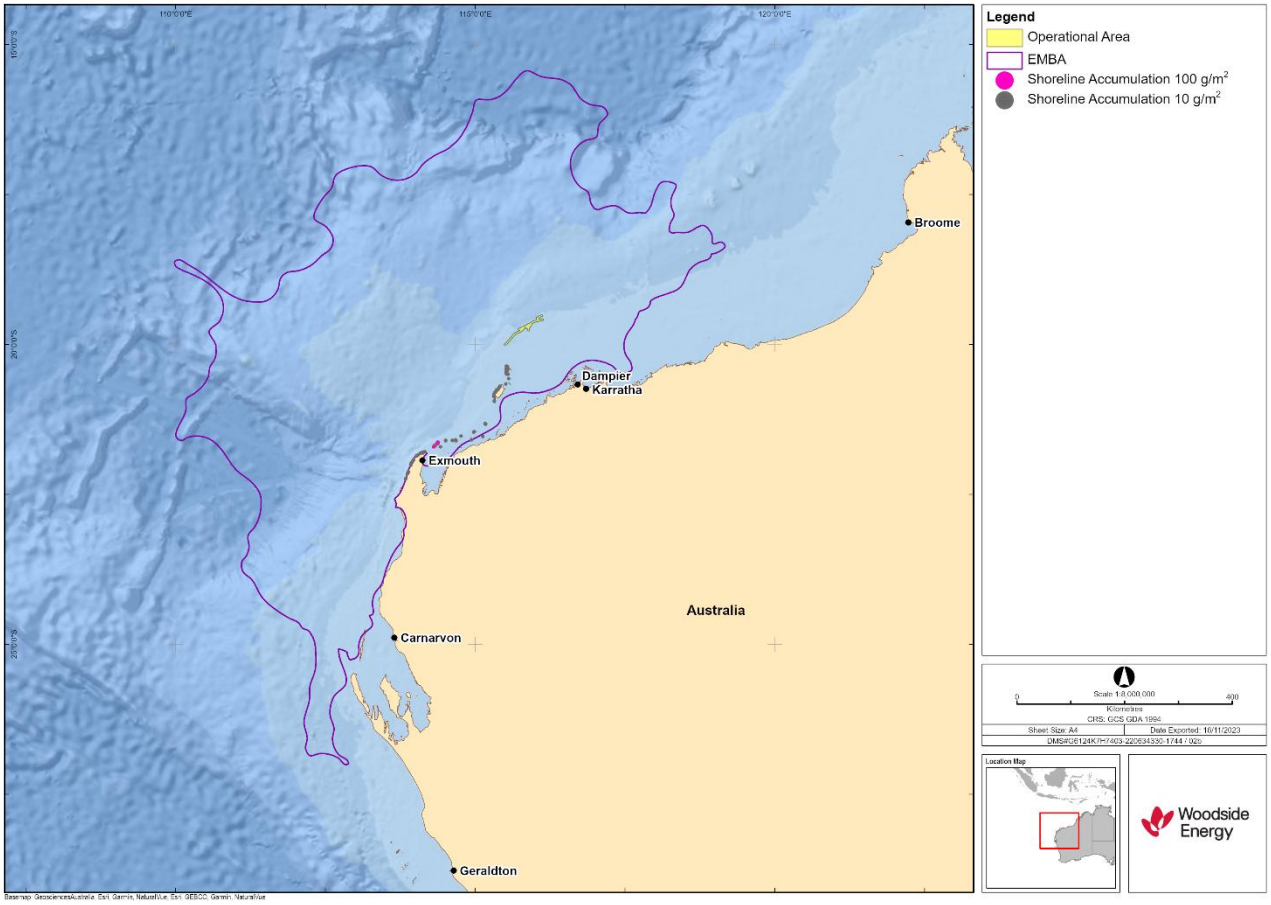


Figure 2-1: Operational Area and EMBA for the GWA Facility Operations EP.

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2.2 Table 1: Assessment of relevance

Government, fisheries, community, titleholders, NGOs, research institutes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Commonwealth and WA State Government Departments or Agencies – Marine			
Australian Border Force (ABF)	Responsible for coordinating maritime security.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. ABF's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Communications and Media Authority (ACMA)	Regulator for communications and media.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. ACMA's responsibilities may be relevant to the activity as there may be telecommunications lines that intersect the Operational Area.	Yes
Australian Fisheries Management Authority (AFMA)	Responsible for managing Commonwealth fisheries.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. No Commonwealth fisheries are active in the Operational Area. The North West Slope Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA. AFMA's responsibilities may be relevant to the activity as the North West Slope Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.	Yes
Australian Hydrographic Office (AHO)	Responsible for maritime safety and Notices to Mariners.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. AHO's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Australian Maritime Safety Authority (AMSA) Marine Pollution	Legislated responsibility for oil pollution response in Commonwealth waters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. AMSA Marine Pollution's responsibilities may be relevant to the activity as the proposed activity has a hydrocarbon spill risk which may require AMSA response in Commonwealth waters.	Yes
Australian Maritime Safety Authority (AMSA) Navigation Safety	Statutory agency for vessel safety and navigation.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. AMSA Navigation Safety's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries	Responsible for implementing Commonwealth policies and programs to support agriculture, fishery, food and forestry industries.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. No Commonwealth fisheries are active in the Operational Area. The North West Slope Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA. DAFF – Fisheries responsibilities may be relevant to the activity as North West Slope Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.	Yes
Department of Defence (DoD)	Responsible for defending Australia and its national interests.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(a) of the Environment Regulations. DoD's responsibilities may be relevant to the activity as defence training areas lie within the EMBA.	Yes
Department of Planning, Lands and Heritage (DPLH)	Responsible for state level land use planning and management, and oversight of Aboriginal cultural heritage and built heritage matters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. DPLH's responsibilities may be relevant to the activity as there is known Maritime Cultural Heritage overlapping the EMBA.	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Department of Primary Industries and Regional Development (DPIRD)	Responsible for managing State fisheries.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery (Condition) and Specimen Shell Managed Fishery are active in the Operational Area. The Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Line Fishery (Condition), West Australian Sea Cucumber Fishery, Shark Bay Crab Managed Fishery, Shark Bay Prawn Managed Fishery, Shark Bay Scallop Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, West Coast Demersal Scalefish (Interim) Managed Fishery, West Coast Rock Lobster Managed Fishery, Exmouth Gulf Beach Seine and Mesh Net Managed Fishery, and Open Access in the North Coast and Gascoyne Coast have been active in the EMBA within the past 5 years. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	Yes
Department of Transport and Major Infrastructure (DTMI)	Legislated responsibility for oil pollution response in State waters.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has a hydrocarbon spill risk, which may require DTMI response in State waters.	Yes
Pilbara Ports	Encompasses the Ports of Ashburton, Dampier, Port Hedland and Varanus Island. Oversees the operation of the greenfield ports of Anketell, Balla Balla, Cape	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 25(1)(b) of the Environment Regulations. The proposed activity has the potential to impact Pilbara Ports' responsibilities as the EMBA overlaps Pilbara Ports' areas of responsibility.	Yes

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Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	Preston East, Cape Preston West and Urala. Oversees the Shipping and Pilotage Act 1967 (SPA) ports of Barrow Island, Cape Preston, Onslow and Port Walcott.		
Western Australian Museum (WAM)	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	Woodside has applied its methodology for 'Historical cultural heritage groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There are known shipwrecks overlapping the EMBA for which WAM may be responsible.	Yes
Commonwealth and WA State Government Departments or Agencies – Environment			
Clean Energy Regulator (CER)	The Clean Energy Regulator administers schemes legislated by the Australian Government for measuring, managing, reducing or offsetting Australia's carbon emissions.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. CER's responsibilities will be relevant to operational EPs in relation to emissions and climate related matters.	Yes
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)	DAFF administers, implements and enforces the Biosecurity Act 2015. DAFF requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. DAFF requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DAFF – Biosecurity's responsibilities may be relevant to the proposed activities in the EMBA in the prevention of introduced marine species.	Yes

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	offshore petroleum activities either inside or outside Australian territory.		
Department of Biodiversity, Conservation and Attractions (DBCA)	Responsible for managing WA's parks, forests and reserves to achieve wildlife conservation and provide sustainable recreation and tourism opportunities.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(b) of the Environment Regulations. The DBCA's responsibilities may be relevant to the activity as the EMBA overlaps WA parks, forests or reserves. Activities have the potential to impact marine tourism in the EMBA.	Yes
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use, water resources, the environment and our heritage. Administers the Underwater Cultural Heritage Act 2018 in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater heritage and their associated artefacts in Commonwealth waters.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. DCCEEW's responsibilities may be relevant to the proposed activities in the EMBA as there are potential environmental impacts from the proposed activity. There is known Maritime Cultural Heritage overlapping the EMBA.	Yes
Department of Water and Environment Regulation (DWER)	Responsible for management and regulation of WA's environment and water resources.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(b) of the Environment Regulations. DWER has not been assessed as relevant for this activity as EPs are regulated under separate petroleum-specific approval frameworks administered by DMPE or NOPSEMA. DWER may be relevant where an activity requires, or has a clear link to, a DWER or EPA-administered approval or statutory function, however no such approval pathway or statutory function is engaged for this activity. Woodside chose to contact DWER at its discretion in line with Section 5.3.7 of the EP.	No
Director of National Parks (DNP)	Responsible for the management of Commonwealth parks and conservation zones.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations.	Yes

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		DNP's responsibilities may be relevant to the activity as DNP requires an awareness of activities that occur within Australian Marine Parks (AMPs), and an understanding of potential impacts and risks to the values of parks (NOPSEMA guidance note: N-04750-GN1785 A620236, June 2020). Titleholders are required to consult DNP on offshore petroleum activities if they occur in, or may impact on, the values of marine parks, including where potential spill response activities may occur in the event of a spill (i.e. scientific monitoring).	
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	Supports the DBCA to manage the Ningaloo Coast World Heritage Area.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 25(1)(a) of the Environment Regulations. The NCWHAC's responsibilities may be relevant to the activity as the EMBA overlaps the Ningaloo Marine Park.	Yes
Commonwealth and State Government Departments or Agencies – Industry			
Department of Mines, Petroleum and Exploration (DMPE)	Department of relevant State Minister.	Required to be consulted under regulation 25(1)(c) of the Environment Regulations.	Yes
Department of Industry, Science and Resources (DISR)	Department of relevant Commonwealth Minister.	Required to be consulted under regulation 25(1)(a) of the Environment Regulations.	Yes
Commonwealth commercial fisheries and peak representative bodies			
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Represents the interests of the Southern Bluefin Tuna Fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Southern Bluefin Tuna Fishery overlaps the Operational Area and EMBA but has not been active in the Operational Area or EMBA within the past five years. ASBTIA's functions, interests or activities may be relevant to the activity as the Southern Bluefin Tuna Fishery overlaps the EMBA.	Yes
Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers with licences in Commonwealth waters.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Southern Bluefin Tuna Fishery, Western Skipjack Fishery and Western Tuna and Billfish Fishery overlap the Operational Area, however have not	Yes

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		been active in the Operational Area within the past 5 years. The North-West Slope Trawl Fishery, Southern Bluefin Tuna Fishery, Western Deepwater Trawl Fishery, Western Skipjack Fishery and Western Tuna and Billfish Fishery overlap the EMBA and North West Slope Trawl, Western Deepwater Trawl and Western Tuna and Billfish Fishery have been active in the EMBA within the past 5 years. CFA's functions, interests or activities may be relevant to the activity as the North-West Slope Trawl Fishery, Southern Bluefin Tuna Fishery, Western Deepwater Trawl Fishery, Western Skipjack Fishery and Western Tuna and Billfish Fishery overlap the EMBA.	
North West Slope Trawl Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years.	Yes
Southern Bluefin Tuna Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the past 5 years. Woodside does not consider that the proposed activity will present a risk to licence holders, given since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Patterson et al., 2022). In addition, given fishing methods by licence holders for species fished in this fishery (Australia has a 35% share of total global allowable catch of Southern Bluefin Tuna, which is value-added through tuna ranching near Port Lincoln (South Australia), or fishing effort in New South Wales (Australian Southern Bluefin Tuna Industry Association). Woodside chose to contact Southern Bluefin Tuna Fishery at its discretion in line with Section 5.3.7.	No
Tuna Australia	Represents the interests of the Western Tuna and Billfish Fishery and Western Skipjack Fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Western Tuna and Billfish Fishery and Western Skipjack Fishery overlap the Operational Area and EMBA and Western Tuna and Billfish	Yes

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		Fishery has been active in the EMBA within the past 5 years. Tuna Australia's functions, interests or activities may be relevant to the activity as the Western Tuna and Billfish Fishery and Western Skipjack Fishery overlap the EMBA.	
Western Deepwater Trawl Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years.	Yes
Western Skipjack Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the past 5 years. Woodside does not consider that the activity will present a risk to licence holders, given the fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active and no fishing has occurred since 2009 (Patterson et al., 2022). In addition, interactions are not expected given the species' pelagic distribution fishing methods for species fished by licence holders. Woodside chose to contact Western Skipjack Fishery at its discretion in line with Section 5.3.7.	No
Western Tuna and Billfish Fishery	Commonwealth commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the past 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years.	Yes
State commercial fisheries and peak representative bodies			
Aquaculture Council of Western Australia (ACWA)	State peak body for WA's aquaculture industry.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. ACWA's members overlap the EMBA and are active within the EMBA.	Yes

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		As the peak body for WA's aquaculture industry, ACWA's functions may be relevant to the activity as ACWA members are active in the EMBA.	
Western Australian Fishing Industry Council (WAFIC)	Represents the interests of commercial fishers with licences in State waters.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery (Condition) and Specimen Shell Managed Fishery are active in the Operational Area. The Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Managed Fishery, Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Nickol Bay Prawn Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Line Fishery (Condition), West Australian Sea Cucumber Fishery, Shark Bay Crab Managed Fishery, Shark Bay Prawn Managed Fishery, Shark Bay Scallop Managed Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, West Coast Demersal Scalefish (Interim) Managed Fishery, West Coast Rock Lobster Managed Fishery, Exmouth Gulf Beach Seine and Mesh Net Managed Fishery, and Open Access in the North Coast and Gascoyne Coast have been active in the EMBA within the past 5 years. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries. Under an agreement WAFIC issued consultation materials to relevant commercial fisheries licence holders. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would be undertaken only in the event of an unplanned emergency scenario.	Yes

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Exmouth Gulf Prawn Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Gascoyne Demersal Scalefish Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Mackerel Managed Fishery (Area 2)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area (Area 2) and EMBA (Areas 2 and 3) and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	Yes

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Marine Aquarium Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	Yes
Nickol Bay Prawn Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past five years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Onslow Prawn Managed Fishery (Area 1 and 2)	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	Yes
Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA.	No

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		As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
Pearl Oyster Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. Although the fishery overlaps the Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the past 5 years.	No
Pearl Producers Association (PPA)	Peak representative organisation of The Australian South Sea Pearling Industry, with members in Western Australia and the Northern Territory.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The Pearl Oyster Managed Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Pearl Oyster Managed Fishery, the PPA has also been assessed as not relevant.	No
Pilbara Crab Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Demersal Scalefish Fishery: Pilbara Fish Trawl (Interim) Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years.	Yes

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		Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	
Demersal Scalefish Fishery: Pilbara Trap Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	Yes
Demersal Scalefish Fishery: Pilbara Line Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	Yes
Shark Bay Crab Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Shark Bay Prawn Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations.	No

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		The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
Shark Bay Scallop Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Specimen Shell Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the past 5 years. Woodside acknowledges WAFIC's consultation guidance and has applied this by consulting, via WAFIC, fisheries that are assessed as having a potential for interaction in the Operational Area.	Yes
West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery overlaps the Operational Area but it has not been active within the Operational Area within the past 5 years.	No

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		The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	
West Coast Demersal Gillnet & Demersal Longline Interim Managed Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
West Coast Demersal Scalefish Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
West Coast Rock Lobster Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps	Yes

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		the EMBA and has been active in the EMBA within the past 5 years. As the fishery is represented by the Western Rock Lobster Council, not WAFIC, WAFIC guidance does not apply for this fishery.	
Western Australia Sea Cucumber Fishery	State commercial fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the past 5 years, however, based on WAFIC's advice, Woodside does not need to consult fisheries in the EMBA. As per WAFIC's Commercial Fishing Consultation Framework for the Offshore Oil and Gas Sector and Consultation Approach for Unplanned Events, consultation with State fisheries relevant to the EMBA of the proposed activity would however be undertaken only in the event of an unplanned emergency scenario.	No
Western Rock Lobster Council	Represents the interests of the Western Rock Lobster Managed Fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 25(1)(d) of the Environment Regulations. The West Coast Rock Lobster Managed Fishery is active within the EMBA. The Western Rock Lobster Council's functions may be relevant to the activity as the West Coast Rock Lobster Managed Fishery is active in the EMBA.	Yes
Recreational marine users and peak representative bodies			
Gascoyne Recreational Marine Users	Gascoyne-based dive, tourism and charter operators.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. AOA International Pty Ltd, Atgni Super Pty Ltd, Austanley Pty Ltd, Bluecity Enterprises Pty Ltd & Alltric Pty Ltd, Bondall Pty Ltd, Brefjen Nominees Pty Ltd, Chapel Nominees Pty Ltd, D & N Nominees Pty Ltd, Eco Wharf Pty Ltd, Eco-Abrolhos Pty Ltd, Fawesome Expeditions Pty Ltd, Fire Tiger Pty Ltd, Jostan Holdings Pty Ltd, KM Charters Pty Ltd, KW Marine Pty Ltd, L & S Family Holdings Pty Ltd, Lulamanzi Investments Pty Ltd, Makalee Pty Ltd, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monkey Mia Yacht Charters Pty Ltd, Monster	Yes

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		Sportfishing Adventures Pty Ltd, North Star Cruises Australia Pty Ltd, Oceaneer Marine Brokers Pty Ltd, On Strike Charters (WA) Pty Ltd, Reel Force Charters Pty Ltd, Seafresh Holdings Pty Ltd, Sharkbay Charters Pty Ltd, Silverado Charters Pty Ltd, The Great Escape Charter Company Pty Ltd, Wongs Way Out Pty Ltd, Andro Maritime Services Australia, Aquatic Adventure Exmouth, Birds Eye View, Blue Horizon Charters, Blue Lightning Charters, Cape Immersion Tours, Coastal Adventure Tours, Coral Bay Ecotours, Dive Ningaloo, Evolution Fishing Charters, Exmouth Adventure Co., Exmouth Dive Centre, Innkeeper Sport Fishing, Kings Ningaloo Reef Tours, Live Ningaloo, Montebello Island Safaris, Ningaloo Aviation, Ningaloo Blue, Ningaloo Coral Bay Boats, Ningaloo Discovery, Ningaloo Fly Fishing, Ningaloo Marine Interaction, Ningaloo Reef Dive, Ningaloo Reef to Range Tours, Ningaloo Safari Tours, Ningaloo Sportfishing Charters, Ningaloo Whaleshark n Dive, Ningaloo Whaleshark Swim, Ocean Eco Adventures, Peak Sportfishing Charters, Pelican Charters, Seaforce Charters, Seafresh Holdings Pty Ltd, Set the Hook, Three Islands, Top Gun Charters, Ultimate WaterSports, View Ningaloo, Yardi Creek Boat Tours. (The above list of businesses is in addition to individuals as per SI Report A, reference 30.1). Activities have the potential to impact Gascoyne-based dive, tourism and charter operators' functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	
Marine Tourism WA	Represents the interests of marine tourism in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Pilbara/Kimberley Recreational Marine Users	Pilbara/Kimberley-based dive, tourism and charter operators.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. AdCru Assets Pty Ltd, AOA International Pty Ltd, Australian Port and Marine Services Pty Ltd, Bloor Street Investments Pty Ltd, Bondall Pty Ltd, Brefjen Nominees Pty Ltd, Broome Chiropractic Pty Ltd, Capricorn Mist Pty Ltd, Chapel Nominees Pty Ltd, Charter Express Pty Ltd, Cm Marine Pty	Yes

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		Ltd, Cm Ventures Pty Ltd, Coastway Investments Pty Ltd, Compagnie Du Ponant Pty Ltd, Coral Princess Cruises (NQ) Pty Ltd, Discovery Holiday Parks Pty Limited, Diversity Charter Company WA Pty Ltd, Eco Wharf Pty Ltd, Eco-Abrolhos Pty Ltd, Fawesome Expeditions Pty Ltd, Go Beyond Broome Pty Ltd, Hartley Motorcycles Pty Ltd, Hotel and Resort Investments Pty Ltd, Humbug Fishing Pty Ltd, KCC Group Pty Ltd, Kimberley Getaway Cruises Pty Ltd, Kimberly Pearl Tours Pty Ltd, King Sound Resort Hotel Pty Ltd, KW Marine Pty Ltd, L & S Family Holdings Pty Ltd, Lake Argyle Cruises Pty Ltd, Lombadina Aboriginal Corporation, Lulamanzi Investments Pty Ltd, Mackerel Islands Pty Ltd, , Marbil WA Pty Ltd, Marine Agents Australia Pty Ltd, Maritime Engineering Services Pty Ltd, Melkit Pty Ltd, Millennial Charters Pty Ltd, Monster Sportfishing Adventures Pty Ltd, North Star Cruises Australia Pty Ltd, Ocean Charters Pty Ltd, Pearl Expeditions Pty Ltd, Sea 2 Pty Ltd, Sealife Charters Pty Ltd, Silverado Charters Pty Ltd, Split Tide Pty Ltd, Super Yachts Perth Pty Ltd, The Great Escape Charter Company Pty Ltd, Western Wave Marine Pty Ltd, Willie Creek Pearl Farm Pty Ltd, Wongs Way Out Pty Ltd, Archipelago Adventures, Broome Tours Pty Ltd, Hampton Harbour Boat & Sailing Club, Mackerel Islands Pty Ltd, Marine Rescue Dampier, Nickol Bay Sport Fishing Club, Port Walcott Volunteer Marine Rescue, Port Walcott Yacht Club. (The above list of businesses is in addition to individuals as per SI Report A, reference 30.2). Activities have the potential to impact Pilbara/Kimberley-based dive, tourism and charter operators' functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	
Recfishwest	Represents the interests of recreational fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations. Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
WA Game Fishing Association	Represents the interests of game fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 25(1)(d) of the Environment Regulations.	Yes

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		Activities have the potential to impact game fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	
Titleholders and Operators			
Beagle No 1	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Bounty Oil and Gas	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
BP Developments Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Carbon CQ	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Carnarvon Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Chevron Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Coastal Oil and Gas	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Energy Resources	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Exxon Mobil Australia Resources Company	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations.	Yes

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		Titleholder or Operator's permit area/s overlap/s the EMBA.	
Finder Energy (Finder No 16)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Hancock Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
InCapture	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
INPEX Alpha	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Jadestone	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
JERA Gorgon (part of Chevron)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
JX Nippon O&G Exploration (Australia)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
KATO Energy / KATO Corowa / KATO NWS / KATO Amulet	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
KUFPEC	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Kyushu Electric Wheatstone	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations.	Yes

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		Titleholder or Operator's permit area/s overlap/s the EMBA.	
Longreach Capital Investments	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Melbana Exploration	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
MidOcean Gorgon (part of Chevron, replaces Tokyo Gas Gorgon)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
OMV Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
OPIC Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Osaka Gas Gorgon (part of Chevron)	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Pathfinder Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Pelsart Resources	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
PE Wheatstone	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Santos NA Energy Holdings / Santos Ltd / Santos WA	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations.	Yes

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Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG		Titleholder or Operator's permit area/s overlap/s the EMBA.	
Shell Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
SK Earthon Australia	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Skye Resources	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Tanami Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Vermilion Energy	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Western Gas	Titleholder or Operator.	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 25(1)(d) of the Environment Regulations. Titleholder or Operator's permit area/s overlap/s the EMBA.	Yes
Peak Industry Representative bodies			
Australian Energy Producers (AEP)	Represents the interests of oil and gas explorers and producers in Australia.	Woodside has applied its methodology for 'Peak Industry Representative bodies' under regulation 25(1)(d) of the Environment Regulations. AEP's responsibilities are identified as having an intersect with Woodside's planned activities in the EMBA.	Yes
Local government and elected Parliamentary representatives, community groups or organisations			
Carnarvon Chamber of Commerce and Industry (CCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations.	Yes

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	in the town of Carnarvon and surrounding areas.	The Carnarvon Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	
Exmouth Chamber of Commerce and Industry (CCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Exmouth and surrounding areas.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Exmouth Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Karratha & Districts Chamber of Commerce and Industry (CCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the City of Karratha and surrounding areas.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community representative groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Karratha and Districts Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Onslow Chamber of Commerce and Industry (CCI)	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Onslow and surrounding areas.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Onslow Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Exmouth Community Liaison Group (CLG)	The Exmouth CLG represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth region.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Base Marine, Bhagwan Marine, Cape Conservation Group Inc, Cape Range Riders, DBCA, Department of Defence, Department of Transport and Major Infrastructure, Exmouth Bus Charter, Exmouth Chamber of Commerce and Industry, Exmouth District High School, Exmouth Escape Resort, Exmouth Freight and Logistics, Exmouth Game Fishing Club, Exmouth Tackle and Camping Supplies, Exmouth Visitors Centre, Exmouth Volunteer Marine Rescue, Fat Marine, Gascoyne Development Commission, Gun Marine Services, Ningaloo Centre, Ningaloo Lodge, Ningaloo Coast World Heritage Advisory Council, PHI Aviation, Offshore Unlimited, Shire of Exmouth, Santos, Terrafirma Offshore, WA Country Health Service. The Exmouth CLG's area of responsibility under its terms of reference overlaps the EMBA.	Yes

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Karratha Community Liaison Group (CLG)	The Karratha CLG is the recognised community group that represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Pilbara region.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Karratha CLG's area of responsibility under its terms of reference does not overlap the EMBA. WA Police, Karratha Health Care, Development WA, Ngarluma Yindjibarndi Foundation Ltd (NYFL)*, Department of Education, Pilbara Ports, Regional Development Australia, Pilbara Development Commission, Dampier Community Association, City of Karratha, Karratha & Districts Chamber of Commerce and Industry, Horizon Power, Murujuga Aboriginal Corporation (MAC)*. *NYFL and MAC were consulted directly as described below. Under regulation 25(1)(e), Woodside, at its discretion, chose to assess the CLG as a relevant person.	Yes
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek and Wickham.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The City of Karratha's area of responsibility overlaps the EMBA.	Yes
Shire of Ashburton	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Onslow, Pannawonica, Paraburdoo and Tom Price.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Ashburton's area of responsibility overlaps the EMBA.	Yes
Shire of Carnarvon	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Babbage Island, Brockman, Browns Range, Carnarvon, Coral Bay, East Carnarvon, Greys Plain, Ingaarda, Kingsford, Morgantown, North Plantations, South Carnarvon, South Plantations.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Carnarvon's area of responsibility overlaps the EMBA.	Yes

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Shire of Exmouth	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Exmouth, Learmonth and North West Cape.	Woodside has applied its methodology for 'Local government and elected Parliamentary representatives, community groups or organisations' under regulation 25(1)(d) of the Environment Regulations. The Shire of Exmouth's area of responsibility overlaps the EMBA.	Yes
Other non-government groups or organisations (NGOs) or individuals			
Australian Conservation Foundation (ACF)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine ACF's relevance for the proposed activity. Woodside has assessed that ACF has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact ACF at its discretion in line with Section 5.3.7 to provide an opportunity to engage with ACF to assist to identify whether its functions, interests or activities may be affected by the planned activities.	No
Australian Marine Conservation Society (AMCS)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine AMCS's relevance for the proposed activity. Woodside has assessed that AMCS has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact AMCS at its discretion in line with Section 5.3.7 to provide an opportunity to engage with AMCS to assist to identify whether its functions, interests or activities may be affected by the planned activities.	No
Conservation Council of Western Australia (CCWA)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine CCWA's relevance for the proposed activity.	No

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		Woodside has assessed that CCWA has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact CCWA at its discretion in line with Section 5.3.7 to provide an opportunity to engage with CCWA to assist to identify whether its functions, interests or activities may be affected by the planned activities.	
Greenpeace Australia Pacific (GPAP)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine GPAP's relevance for the proposed activity. Woodside has assessed that GPAP has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact GPAP at its discretion in line with Section 5.3.7 to provide an opportunity to engage with GPAP to assist to identify whether its functions, interests or activities may be affected by the planned activities.	No
350 Australia (350A)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine 350A's relevance for the proposed activity. Woodside has assessed that 350A has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact 350A at its discretion in line with Section 5.3.7 to provide an opportunity to engage with 350A to assist to identify whether its functions, interests or activities may be affected by the planned activities.	No
Doctors for the Environment Australia (DEA) and Doctors for the Environment WA (DEAWA)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine DEA's relevance for the proposed activity.	No

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		Woodside has assessed that DEA has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact DEA at its discretion in line with Section 5.3.7 to provide an opportunity to engage with DEA to assist to identify whether its functions, interests or activities may be affected by the planned activities.	
Friends of Australian Rock Art. Inc (FARA)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine FARA's relevance for the proposed activity. Woodside has assessed that FARA has publicly available statements, campaigns or initiatives relating to broader environmental and energy policy matters. Woodside chose to contact FARA at its discretion in line with Section 5.3.7 to provide an opportunity to engage with FARA to assist to identify whether its functions, interests or activities may be affected by the planned activities.	No
The Wilderness Society (TWS)	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations or individuals' under regulation 25(1)(d) of the Environment Regulations to determine TWS's relevance for the proposed activity. Woodside has assessed that TWS has provided feedback and/or has a publicly available statement (or purpose), website or social media material that demonstrates that its functions, interests or activities may be affected by the planned activities in accordance with the intended outcome of consultation (as set out in Section 5.3.4 of the EP).	Yes
Telstra	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Telstra's relevance for the proposed activity. There are known Telstra communication cables that intersect within the Operational Area. Woodside has assessed that Telstra's functions, interests or activities may be affected by the planned activities.	Yes

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Vocus	Non-government organisation.	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Vocus' relevance for the proposed activity. There are no known communication cables that intersect within the Operational Area. Woodside chose to contact Vocus at its discretion in line with Section 5.3.7 of the EP as there are known Vocus cables within the vicinity of the Operational Area.	No
Research institutes and local conservation groups or organisations			
Australian Institute of Marine Science (AIMS)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by AIMS that intersects within the EMBA. Woodside chose to contact AIMS at its discretion in line with Section 5.3.7 of the EP.	No
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with Section 5.3.7 of the EP.	No
Western Australian Marine Science Institution (WAMSI)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by WAMSI that intersects within the EMBA. Woodside chose to contact WAMSI at its discretion in line with Section 5.3.7 of the EP.	No
Curtin University	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations.	No

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		There may be research being undertaken by Curtin University that intersects within the EMBA. Woodside chose to contact Curtin University at its discretion in line with Section 5.3.7 of the EP.	
Edith Cowan University (ECU)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by ECU that intersects within the EMBA. Woodside chose to contact ECU at its discretion in line with Section 5.3.7 of the EP.	No
Murdoch University	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by Murdoch University that intersects within the EMBA. Woodside chose to contact Murdoch University at its discretion in line with Section 5.3.7 of the EP.	No
University of Western Australia (UWA)	Research institute.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. There may be research being undertaken by UWA that intersects within the EMBA. Woodside chose to contact UWA at its discretion in line with Section 5.3.7 of the EP.	No
Cape Conservation Group (CCG)	Local conservation group focused on protecting the terrestrial and marine environment of the North West Cape.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. CCG's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape.	Yes
Protect Ningaloo	Local conservation group focused on protecting the Exmouth Gulf and Ningaloo Reef and Cape Range.	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 25(1)(d) of the Environment Regulations. Protect Ningaloo's conservation activities have the potential to intersect	Yes

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		with the EMBA as the EMBA overlaps North West Cape and Ningaloo Reef.	

Traditional custodians and nominated representative corporations

Traditional Custodians and nominated representative corporations			
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation.	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Thalanyji native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which BTAC is the Registered Native Title Body Corporate. BTAC is also party to the Macedon Indigenous Land Use Agreement (ILUA), Onslow Iron Project Haulage Road ILUA and the Thalanyji and Minderoo Pastoral ILUA which are coastally adjacent to the EMBA.	Yes
Kariyarra Aboriginal Corporation (Kariyarra)	Representative Aboriginal Corporation.	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Kariyarra native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Kariyarra Aboriginal Corporation is the Registered Native Title Body Corporate. The Kariyarra Aboriginal Corporation is also party to the Kariyarra and State ILUA, which is coastally adjacent to the EMBA.	Yes
Malgana Aboriginal Corporation (Malgana)	Representative Aboriginal Corporation.	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Malgana Part A native title claim, for which the Malgana Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA. The Nanda People Part B, Malgana 2 and Malgana 3 native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Malgana Aboriginal Corporation and Nanda Aboriginal Corporation are the Registered Native Title Body Corporates.	Yes

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		The Malgana Aboriginal Corporation is also party to the Bush Heritage Hamelin Regeneration Project ILUA, Malgana Aboriginal Corporation Conservation Estate ILUA, Malgana Tamala Pastoral Lease Agreement, Malgana Woodleigh Carbla Pastoral Lease Agreement, Malgana Wooramel Pastoral Lease Agreement, Malgana Yaringa Pastoral Lease Agreement which are coastally adjacent to the EMBA.	
Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation.	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. MAC is the Nominated Representative Corporation under the Burrup and Maitland Industrial Estates Agreement (BMIEA), the EMBA does not overlap the Murujuga National Park. MAC was established to represent the members of competing Native Title claims over Murujuga, collectively known as the Ngarda Ngarli and comprising Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo people. The determination of the competing Native Title claims resulted in no native title being found over the lands subject to the BMIEA or below the low water mark. MAC also owns and co-manages the Murujuga National Park, is responsible for the Dampier Archipelago National Heritage Place and the World Heritage Listed Murujuga Cultural Landscape.	Yes
Nanda Aboriginal Corporation (Nanda)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nanda People and Nanda #2 native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Nanda Aboriginal Corporation is the Registered Native Title Body Corporate. The Nanda People Part B, Malgana 2 and Malgana 3 native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Malgana Aboriginal Corporation and Nanda Aboriginal Corporation are the Registered Native Title Body Corporates. The Nanda Aboriginal Corporation is also party to the Nanda Conservation Estate ILUA which is coastally adjacent to the EMBA.	Yes

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Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, which the Baiyungu, Thalanyji and Yinggarda people are party to, overlaps the EMBA. The NTGAC and Yinggarda Aboriginal Corporation are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate ILUA, which overlaps the EMBA. The NTGAC is responsible for the joint management of the inner Ningaloo Marine Park (State Waters), the Cape Range National Park and new conservation areas extending along the Ningaloo Coast, which runs in parallel to the outer Ningaloo Marine Park in Commonwealth waters. The NTGAC is also party to the Nganhurra Thanardi Garrbu Aboriginal Corporation Conservation Estate ILUA, which overlaps the EMBA also. The NTGAC's nominated representative is the Yamatji Marlpa Aboriginal Corporation (YMAC) and the NTGAC executive officer and contact officer pursuant to the Corporations (Aboriginal and Torres Strait Islander) Act 2006 is employed by YMAC. Woodside has therefore consulted the NTGAC, via YMAC.	Yes
Ngarluma Aboriginal Corporation (NAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma People native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which NAC is the Registered Native Title Body Corporate. The Ngarluma/ Yindjibarndi People native title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps the EMBA. NAC is also party to the Anketell Port, Infrastructure Corridor and Industrial Estates Agreement, Ngarluma and Woodside Power Project ILUA, RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement) and the Wickham Motorcross ILUA which are coastally adjacent to the EMBA.	Yes

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Nhuwala Claim Group (Nhuwala)	Native Title Group	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nhuwala Claim Group is a registered native title claim but does not yet have a determination. It is adjacent to the EMBA. All communications with Nhuwala Claim Group are via Yamatji Marlpa Aboriginal Corporation.	Yes
Nhuwala / Thalanyji People	Native Title Group	Native Title Claim Group Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nhuwala / Thalanyji People is a registered native title claim but does not yet have a determination. It is adjacent to the EMBA. All communications with Nhuwala / Thalanyji People are via Buurabalayji Thalanyji Aboriginal Corporation.	Yes
Nyangumarta Warrarn Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Nyangumarta People (Part A) native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, for which the Nyangumarta Warrarn Aboriginal Corporation is the Registered Native Title Body Corporate. The Nyangumarta Warrarn Aboriginal Corporation is also party to the Nyangumarta PBC KSCS ILUA and the Nyangumarta Warrarn Aboriginal Corporation & Wallal Downs Pastoral Lease ILUA which are coastally adjacent to the EMBA.	Yes
Robe River Kuruma Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Robe River Kuruma Aboriginal Corporation is party to the KM & YM Indigenous Land Use Agreement 2018 which overlaps and RTIO Kuruma Marthudunera People ILUA which is coastally adjacent to the EMBA.	Yes
Wanparta Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations.	Yes

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		The Ngarla and Ngarla #2 (Determination Area A), Ngarla Overlap Proceeding and Ngarla People (Mount Goldsworthy Lease Proceeding) native title claim does not overlap the EMBA. The claims are coastally adjacent to the EMBA, for which Wanparta Aboriginal Corporation is the Registered Native Title Body Corporate. The Wanparta Aboriginal Corporation is party to the Ngarla Pastoral ILUA, Ngarla PBC KSCS ILUA, Pardoo Beef Corporation Homestead Precinct Project ILUA (Body Corporate) 2024 and Pardoo Beef Corporation Irrigated Agriculture Project ILUA (Body Corporate) 2020 which are coastally adjacent to the EMBA.	
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Yaburara & Mardudhunera People native title claim, for which WAC is the Registered Native Title Body Corporate, overlaps the EMBA. WAC is party to the Cape Preston Project Deed (YM Mardie ILUA), KM & YM Indigenous Land Use Agreement 2018 which overlaps the EMBA and the Cape Preston West Export Facility which are coastally adjacent to the EMBA.	Yes
Wong-Goo-Tt-Oo	Traditional Custodial of Murujuga	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. Wong-Goo-Tt-Oo is part of the Ngarda Ngarli which is represented by MAC. Wong-Goo-Tt-Oo has requested to be consulted separately.	Yes
Yindjibarndi Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma/ Yindjibarndi People native title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Body Corporates, overlaps the EMBA.	Yes
Yinggarda Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, which the Baiyungu, Thalanyji and Yinggarda people are party to, overlaps the EMBA. The NTGAC and YAC are the	Yes

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		Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. YAC is party to the Brickhouse and Yinggarda Aboriginal Corporation ILUA which is coastally adjacent to the EMBA.	
Native Title Representative Bodies			
Kimberley Land Council (KLC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. KLC is the Native Title Representative Body for the Kimberley region of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders. KLC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.	Yes
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 25(1)(d) of the Environment Regulations. YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders. NTGAC and Nanda's nominated representative is YMAC. Woodside has therefore consulted the NTGAC and Nanda via YMAC. YMAC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation. The YMAC is party to the KM & YM ILUA 2018 which overlaps the EMBA. The YMAC is also party to the Kariyarra and State ILUA, which is adjacent to the EMBA.	Yes
Self-identified Indigenous Groups			
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 25(1)(d) of the Environment Regulations. The Ngarluma and Yindjibarndi People, the NWS JVs and Woodside entered into an agreement on 22 December 1998 (Agreement).	Yes

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		NYFL was subsequently incorporated under the terms of the Agreement to act as trustee for the trust established to benefit the Ngarluma and Yindjibarndi People and the Roebourne Aboriginal Community. Subsequent to that, the Ngarluma people settled their native title claim and established their nominated representative corporation, the Ngarluma Aboriginal Corporation (PBC); and the Yindjibarndi people settled their native title claim and established their nominated representative corporation, the Yindjibarndi Aboriginal Corporation (PBC). The Ngarluma Aboriginal Corporation and the Yindjibarndi Aboriginal Corporation are the appropriate representative bodies for consultation in relation to cultural interests. NYFL's functions may be relevant to the proposed activity in relation to its functions under the Agreement.	
Other Indigenous Groups			
Save Our Songlines and/or [Individual 1]	Representatives of non-government organisation Save Our Songlines [Individual 1]	Woodside has applied its methodology for 'Traditional Custodians and nominated representative corporations' and 'Other non-government groups or organisations' under regulation 25(1)(d) of the Environment Regulations to determine Save Our Songlines (SOS) and/or [Individual 1] relevance for the proposed activity. Save Our Songlines and/or [Individual 1] stated interest is to stop or pause Scarborough gas and to stop new industry on the Burrup; and oppose planned expansion of the Burrup Hub industry by Woodside, Perdaman and Yara. In addition, their stated interests also include the protection of Murujuga rock art. The scope of the Petroleum Activity under this EP does not fall within their stated interests. Save Our Songlines and/or [Individual 1] have not identified for this activity despite opportunity to do so.	No

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3. CONSULTATION ACTIVITIES

3.1 Goodwyn Alpha Facility Operations EP consultation activities

Woodside has been conducting consultation with relevant persons and other parties for this EP since April 2026 when consultation commenced as part of a planned, integrated and consistent approach to consultation for Woodside's proposed opportunities.

A broad consultation process has been undertaken with relevant persons for the GWA Facility Operations EP. Consultation aims to be inclusive, transparent, voluntary, respectful and two-way. Consultation was undertaken by email, letter, phone call and/or meetings and through advertising.

3.2 Discharging Regulation 25 of the Environment Regulations

Consultation for the GWA Facility Operations EP began with public notification via newspaper and social media advertising and direct engagement with identified relevant persons and other persons and organisations Woodside chose to contact.

This approach has a number of aims, including, where relevant to be inclusive, transparent, voluntary, respectful and two-way. Consultation was undertaken, where relevant, by email, letter, phone call and/or meetings and through advertising. Further details on these activities are provided in the following sections.

3.2.1 Newspaper advertising

Woodside advertised the EP consultation with an overview of planned activities in national, state, regional and Indigenous newspapers as per the table below (also see Record of Consultation, reference 6.3) to reach relevant communities within or adjacent to the EMBA.

No direct comments or feedback were received from the advertisements.

Newspaper	Coverage	Readership	Publication dates
The Australian	National	Weekly – 453,000	13 April 2026
The West Australian	Regional (WA)	Daily – 364,000	13 April 2026
Pilbara News	Local (WA)	Weekly – 17,611	15 April 2026
Midwest Times	Local (WA)	Weekly – 50,534	15 April 2026
Koori Mail	Indigenous	Monthly – 80,000	22 April 2026
National Indigenous Times	Indigenous	Monthly – 1,484,340	28 April 2026

3.2.2 Direct consultation

Woodside provided a Consultation Information Sheet to relevant persons and to other persons and organisations Woodside chose to contact during the initial consultation period (see Section 5.3.4 and 5.3.7 of the EP).

The Consultation Information Sheet included an overview of the activity, maps, a summary of key risks and/or impacts and management measures (Record of Consultation, reference 6.1.1). It also outlined the timeframe for providing feedback and included Woodside's toll-free phone number (1800 442 977) and the consultation email address feedback@woodside.com to support consultation.

A Summary Information Sheet tailored specifically for Traditional Custodian groups and Indigenous relevant persons was developed, where relevant, using content from the Consultation Information Sheet (Record of Consultation, reference 6.1.2).

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As part of the EP's initial consultation, Woodside provided additional targeted information to specific relevant persons, as necessary. This information included:

- vessel density map (Record of Consultation, reference 6.1.4)
- GIS shape files
- shipwreck information (Record of Consultation, reference 6.1.5)
- a submarine communication cable map (Record of Consultation, reference 6.1.6)
- defence zone map (Record of Consultation, reference 6.1.3).

Where appropriate, Woodside conducted phone calls and meetings with relevant persons.

Where appropriate, targeted follow-up emails were sent to relevant persons who had not provided a response prior to the close of the target feedback period.

Woodside considered relevant person responses and assessed the merits and relevance of objections and claims about the potential adverse impact of the proposed activity set out in the EP, in accordance with the intended outcome of consultation (see Section 5.2 of the EP).

Consultation activities undertaken with relevant persons are summarised at Appendix F, Table 2.

Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact (see Section 5.3.7 of the EP) or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 3.

3.2.3 Website and social media

Since the commencement of the initial consultation period (April 2026), the Consultation Information Sheet has been available on Woodside's website. The website also includes alternative methods for relevant persons to provide feedback to Woodside and information on other Woodside activities. From April 2026, Woodside ran a geotargeted paid social media campaign (Record of Consultation, reference 6.4) covering various local government authorities within, or coastally adjacent to, the EMBA for the proposed activities. The campaign focused on persons whose functions, interests or activities might be affected by the EP's activities and directed them to Woodside's Consultation Activities page so that, if they wanted further information, they could learn more about the EP and proposed activities.

Below is a summary of the reach and impact of the social campaign.

Platforms	Geotargeted reach	Post dates	Impact
Meta – Facebook and Instagram	Carnarvon, Coral Bay, Exmouth, Onslow, Dampier, Karratha, Roebourne	15/04/2026 28/04/2026 11/05/2026	Reach: 68,692 Impressions: 124,353 Link Clicks: 408 Click Through Rate: 0.33%

Below is a summary of comments and reactions to the social media campaign. Please note comments and reactions are not available for Instagram.

Platform	Number of reactions	Number of comments
Meta – Facebook and Instagram	11 👍 35 reactions (unknown type) 4 shares	8 comments

3.3 Proactive consultation

3.3.1 Community engagement

The community events that Woodside has conducted or attended are outlined below (and captured in more detail in Record of Consultation, reference 6.5). To support attendance, Woodside published

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advertisements ahead of these sessions and events in relevant local newspapers and on social media.

Date	Location	Event (if applicable)
15 May 2026	Karratha	Red Earth Arts Festival (REAF) markets
7 June 2026	Dampier	Dampier Beachside Markets
1-2 August 2026	Karratha	FeNaCING

3.3.2 Community Liaison Group engagement

The Exmouth and Karratha Community Liaison Groups (CLGs) represent the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth and Karratha regions. Woodside regularly meets with the two CLGs to discuss a range of issues including consultation of specific EPs. For this EP, see 4.9.2 for consultation summary with Exmouth CLG and 4.9.3 for Karratha CLG.

3.3.3 Newsletters

Woodside's EP focussed newsletter *Let's Talk* is designed to reach existing and potential relevant persons, supports self-identification and provides information about Woodside's EP-related activities. The newsletter provides regular updates about EP consultation activities, case studies on effective consultation with relevant persons and other EP related information such as forthcoming events where Woodside personnel will be consulting with the local community. *Let's Talk* is distributed in a variety of locations including Karratha, Roebourne, Exmouth and Perth as well as across digital platforms including Woodside's website and social media channels. People can also subscribe to receive *Let's Talk* on Woodside's website. (Record of Consultation, reference 6.6.1).

Woodside also publishes the Karratha Community Update newsletter quarterly which includes a QR code and encourages people to go to the Consultation Activities page on Woodside's website to subscribe and find information on EPs. (Record of Consultation, reference 6.6.2).

3.4 Traditional Custodian specific consultation

In addition to the approaches outlined above including community information sessions, additional activities were undertaken with relevant Traditional Custodians, which were specifically designed to provide for effective engagement with Traditional Custodians and so that information was provided in a form that was readily accessible and appropriate (see Section 5.5 of the EP).

Consultation undertaken specifically with Traditional Custodians for this EP includes direct engagement with nominated representative bodies via the contact listed on the Office of the Registrar of Indigenous Corporations (ORIC) website, requesting advice on how they would like to be engaged and asking whether other members and/or individuals should be consulted. This has resulted in:

- the EP's Summary Information Sheet, being provided to relevant Traditional Custodian groups (Record of Consultation, 6.1.2). The resource is developed and reviewed by subject matter experts with knowledge and experience in Indigenous affairs, in collaboration with technical experts to ensure content is appropriate to the intended recipients
- meetings with directors, Elders and any nominated representatives, at a time and location nominated by them
- the exchange of written feedback and correspondence
- telephoning relevant persons to provide context, if requested and/or required

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Ongoing efforts were made to engage and develop relationships with these bodies via a variety of means such as email, phone calls, alternative contacts, texts, social media and, in some cases, physical visits.

Consultation meetings with attendees decided by Traditional Custodian groups and supported by senior Woodside representatives, subject matter experts and Indigenous Affairs advisers with skills and experience in community engagement. Meetings are developed through a two-way consultation process to ensure effective information sharing via:

- mutually agreed agenda avoiding time pressure
- encouraging Traditional Custodian attendees to control the pace of the meeting and pause at any time to ask questions, seek clarification or provide feedback
- visual aids such as posters, presentations, maps, simplified technical videos and real-world pictures and footage
- emphasis on potential planned and unplanned risks and impacts of the activity
- ample opportunity for questions and feedback
- discussion about ongoing relationship development and opportunities
- distribution of hard-copy Consultation Information Sheets (Record of Consultation, 6.1.1) and Summary Consultation Information Sheets (Record of Consultation, reference 6.1.2) are available face-to-face consultation
- meeting costs such as sitting fees, travel and executive support and other support required
- advertising in Indigenous publications such as the National Indigenous Times (28 April 2026) and Koori Mail (22 April 2026) (Record of Consultation, reference 6.3.6 and reference 6.3.6)

Newspaper	Coverage	Publication dates
Koori Mail	Indigenous	22 April 2026
National Indigenous Times	Indigenous	28 April 2026

Woodside also ran a geotargeted sponsored social media campaign (Record of Consultation, reference 6.4) to various communities that are coastally adjacent to the EMBA for the proposed activities.

Social media is a highly effective means to engage Indigenous audiences as outlined in Indigenous Digital Life: The Practice and Politics of Being Indigenous on Social Media (Bronwyn Carlson and Ryan Frazer, 2021).

The campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations how they can learn more about Woodside's proposed activities by visiting Woodside's website. The advertisements linked to Woodside's website, which details the intent of consultation with relevant persons under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth).

Woodside uses a diverse range of techniques to reach relevant persons and build awareness of the proposed activity and how it may affect their functions, activities or interests, and to understand how to provide feedback. The combination of Prescribed Bodies Corporate (PBC) engagement meetings, traditional print media, social media and face-to face community interaction provides a wide-ranging opportunity to consult.

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4. TABLE 2: CONSULTATION REPORT WITH RELEVANT PERSONS OR ORGANISATIONS

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 2 denotes an item raised by a relevant person. The green numbering **(N)** in this section denotes Woodside's response to that issue.

4.1 Commonwealth and WA State Government departments or agencies – marine

4.1.1 Australian Border Force (ABF)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed ABF advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with ABF for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ABF sufficient information to allow ABF to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to ABF on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed ABF a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to ABF advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed ABF 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed ABF a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with ABF is appropriate and adapted to the nature of interests of ABF:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding ABF of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as ABF did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on ABF's functions, interests or activities.

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4.1.2 Australian Communications and Media Authority (ACMA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed ACMA advising of the proposed activity (Record of Consultation, reference 6.1.10), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a map of communication cables in relation to the activity (Record of Consultation, reference 6.1.6).
- On 14 April 2026, ACMA thanked Woodside for its email (SI Report A, reference 1.1). ACMA noted **(1)**.
- On 15 April 2026, Woodside emailed to thank ACMA for its feedback (SI Report A, reference 1.2). Woodside responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) ACMA reiterated previous comments related to Goodwyn Alpha EPs (including that as there may be cables in the area, Woodside should consult Vocus, Telstra and AHO), noted it had nothing further to add, and did not require ongoing consultation in relation to the EP.	**(1)** Woodside has consulted Vocus, Telstra and AHO for this EP and accepts that ACMA has no further feedback in relation to this EP.	**(1)** Woodside thanked ACMA for its response and for reiterating previous comments. Woodside acknowledged that ACMA had no further comments and did not require further consultation on this EP.	**(1)** No additional controls or measures are required. Woodside's summary of consultation with Vocus, Telstra and AHO is set out in Appendix F, Table 2.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Submarine communications infrastructure in proximity to the Operational Area is set out in Section 4.10.6 of the EP. No additional controls or measures are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with ACMA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ACMA sufficient information to allow ACMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to ACMA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided ACMA with information tailored to ACMA by including a map of submarine communication cables in relation to the activity.
- On 14 April 2026, ACMA shared its feedback regarding this activity, indicating the information provided was sufficient to enable ACMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed ACMA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to ACMA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed ACMA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed ACMA a reasonable period for consultation in preparation of the EP, as evidenced by its response on 14 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with ACMA is appropriate and adapted to the nature of interests of ACMA.

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- Woodside considers a reasonable opportunity was provided to ACMA as evidenced by its response on 14 April 2026.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- ACMA provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from ACMA.
  - Made no changes or inclusions to the EP as a result of consultation with ACMA because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.1.3 Australian Fisheries Management Authority (AFMA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AFMA advising of the proposed activity (Record of Consultation, reference 6.1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 23 April 2026, AFMA thanked Woodside for its email (SI Report A, reference 2.1). AFMA raised **(1)** and **(2)**.
- On 29 April 2026, Woodside responded thanking AFMA for its email (SI Report A, reference 2.2). Woodside responded to **(1)** and **(2)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) AFMA advised it had no direct comments on the EP but would like to be included in future consultation on the matter.	**(1)** Woodside notes that AFMA has no direct comments. Woodside will include AFMA in applicable activity notifications that may be issued under the EP.	**(1)** Woodside thanked AFMA for confirming it had no comments and advised it would continue to include AFMA in consultation, including for applicable activity notifications under this EP.	**(1)** No additional controls or measures are required. Woodside will provide activity notifications to AFMA as referenced as PS 1.9 and set out in Table 7-11 of the EP.
(2)	**(2)**	**(2)**	**(2)**

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AFMA noted Woodside was consulting directly with Commonwealth fishing operators in the area, confirmed it had consulted active fisheries, and recommended the Southern Bluefin Tuna Fishery be included due to the EMBA bounds. AFMA also provided a list of contact details for Commonwealth fisheries.	Along with consulting active fisheries in the EMBA, Woodside has, at its discretion, consulted ASBTIA and licence holders in the Southern Bluefin Tuna Fishery for this EP.	Woodside acknowledged AFMA's advice regarding the Southern Bluefin Tuna Fishery and confirmed it had contacted the fishery for this EP.	No additional controls or measures are required. Woodside's assessment of relevance for Commonwealth fisheries is set out in Appendix F, Table 1, and a summary of consultation is set out in Appendix F, Table 2.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries issues in Section 4.10.1 of the EP. No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AFMA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given AFMA sufficient information to allow AFMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to AFMA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

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- On 23 April 2026, AFMA shared its feedback regarding this activity, indicating the information provided was sufficient to enable AFMA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed AFMA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AFMA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AFMA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AFMA a reasonable period for consultation in preparation of the EP, as evidenced by its response on 23 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AFMA is appropriate and adapted to the nature of interests of AFMA:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- AFMA provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from AFMA.
  - Made no changes or inclusions to the EP as a result of consultation with AFMA because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.1.4 Australian Hydrographic Office (AHO)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AHO advising of the proposed activity (Record of Consultation, reference 6.1.11), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a vessel density map (Record of Consultation, reference 6.1.4) and GIS shape files.
- On 15 April 2026, AHO emailed Woodside acknowledging consultation (SI Report A, reference 3.1). AHO also noted **(1)** and **(2)**.

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• On 15 April 2026, Woodside responded thanking AHO for its feedback (SI Report A, reference 3.2). Woodside responded to **(1)** and **(2)**.			
Summary of Feedback, Objection or Claim	**Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity**	**Woodside's Statement of Response**	**Inclusion in Environment Plan**
(1) AHO acknowledged consultation and advised it had no concerns.	**(1)** Woodside notes AHO has no concerns regarding the proposed activity.	**(1)** Woodside thanked AHO for confirming it had no concerns.	**(1)** No additional controls or measures are required.
(2) AHO noted Woodside's intention to inform it closer to activities taking place.	**(2)** Woodside notes AHO's feedback reflects its understanding of the notification approach, in that Woodside will notify AHO at least four weeks prior to activities where vessels will be in the Operational Area for more than three weeks at a time.	**(2)** Woodside noted AHO's acknowledgement regarding notifications.	**(2)** No additional controls or measures are required. Woodside will notify AHO prior to the commencement of activities, as referenced as C 1.6 and set out in Table 7-11 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AHO for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:			

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Sufficient Information

Woodside has given AHO sufficient information to allow AHO to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to AHO on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided AHO with information tailored to AHO by including a map of shipping density in relation to the activity, and GIS shape files.
- On 15 April 2026, AHO shared its feedback, objections or claims regarding this activity, indicating the information provided was sufficient to enable AHO to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed AHO a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AHO advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AHO 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AHO a reasonable period for consultation in preparation of the EP, as evidenced by its response on 15 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AHO is appropriate and adapted to the nature of interests of AHO:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- AHO provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from AHO.
  - Made no changes or inclusions to the EP as a result of consultation with AHO because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.1.5 Australian Maritime Safety Authority (AMSA) Marine Pollution

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AMSA Marine Pollution advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required. Woodside has addressed oil pollution planning and response at Appendix I.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AMSA Marine Pollution for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given AMSA sufficient information to allow AMSA Marine Pollution to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to AMSA Marine Pollution on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed AMSA Marine Pollution a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AMSA Marine Pollution advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AMSA Marine Pollution 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AMSA Marine Pollution a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AMSA Marine Pollution is appropriate and adapted to the nature of interests of AMSA Marine Pollution:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding AMSA Marine Pollution of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as AMSA Marine Pollution did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on AMSA Marine Pollution's functions, interests or activities.

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4.1.6 Australian Maritime Safety Authority (AMSA) Navigation Safety

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AMSA Navigation Safety advising of the proposed activity (Record of Consultation, reference 6.1.11), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a vessel density map for the EMBA (Record of Consultation, reference 6.1.4) and GIS shape files.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 14 May 2026, AMSA Navigation Safety responded thanking Woodside for its consultation (SI Report A, reference 4.1). AMSA Navigation Safety attached a chartlet of vessel traffic in the Operational Area and raised items **(1)** to **(6)**.
- Between 16 June and 27 July 2026, Woodside and AMSA Navigation Safety exchanged eight emails (SI Report A, references 4.2 to 4.9) to arrange a meeting regarding AMSA's notification framework including item **(4)**.
- On 31 July 2026, Woodside and AMSA Navigation Safety held an online meeting to discuss the notification framework (SI Report A, reference 4.10). AMSA provided further information on item **(4).**
- On 7 August 2026, Woodside thanked AMSA Navigation Safety for its feedback and for the additional information provided in the 31 July meeting (SI Report A, reference 4.11). Woodside responded to items **(1)** to **(6)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) AMSA advised the Operational Area overlapped a heavily used shipping fairway, and proposed wells and established infrastructure were close to frequent cargo vessel traffic, and recommended Woodside give particular focus to the areas of interaction between cargo vessels and offshore vessels.	**(1)** Woodside acknowledges that the Operational Area overlaps areas of heavy shipping traffic and has considered this in its impact and risk assessment and adopted controls.	**(1)** Woodside noted AMSA's advice regarding vessel traffic with and adjacent to the Operational Area and advised it had considered AMSA's feedback in relation to navigational safety risks associated with the proposed activities. Woodside noted that activities related to the drilling and installation of GWF infrastructure was covered by a separate EP which had separate notifications.	**(1)** No additional controls or measures are required. A description of commercial shipping in relation to the activity is set out in Section 4.10.4 and an impact assessment and controls related to interaction with other marine users are set out in Section 6.7.1 of the EP.
(2) AMSA recommended Woodside evaluate and implement anti-collision measures.	**(2)** As the EP relates to ongoing operations, Woodside will continue to assess and	**(2)** Woodside confirmed it continued to assess and implement collision risk	**(2)** No additional controls or measures are required. Woodside's impact assessment and controls related to

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	implement collision risk mitigation measures as appropriate.	mitigation measures for specific operational activities as appropriate.	interaction with other marine users are set out in Section 6.7.1 of the EP.
(3) AMSA recommended Woodside notify AHO no less than four weeks before operations commence.	**(3)** Woodside has committed to notify AHO no less than four weeks before activities commence where vessels will be in the Operational Area for >3 weeks at a time.	**(3)** Woodside advised it would notify AHO no less than four weeks before commencement of activities where vessels would be in the Operational Area (outside the PSZ), for more than 3 weeks, and would provide details relevant to Maritime Safety Information Notifications and Notices to Mariners	**(3)** No additional controls or measures are required. Woodside will notify AHO as referenced as PS 1.6 and set out in Table 7-11 of the EP.
(4) AMSA recommended Woodside notify its JRCC 72-96 hours before operations commenced. During a meeting on 31 July 2026, AMSA advised the longer lead times supported the promulgation of AUSCOAST warnings where vessel activities had a higher interaction risk or an extended duration.	**(4)** Woodside acknowledges AMSA's recommendations regarding notification lead times for the purposes of AUSCOAST warnings and will, where operationally practicable, provide notifications 72-96 hours prior to applicable activities.	**(4)** Woodside set out its assessment of vessel activities associated with the activity and advised it would notify AMSA prior to commencement of activities where the vessel would be in Operational Area for more than three weeks a time, and where activities were occurring in, or within 1km, of a shipping lane and the vessel would be connected to the seabed. Where operationally practicable, Woodside would provide the notification 72-96 hours prior to the commencement of the activities.	**(4)** Woodside will notify the JRCC as referenced as PS 1.7 and 1.8 and set out in Table 7-11 of the EP.
(5) AMSA confirmed vessels should exhibit appropriate lights and shapes to reflect the nature of operations and comply with the COLREGs.	**(5)** Compliance with COLREGs and Navigation Act 2012 is mandated on Woodside's chartered vessels.	**(5)** Woodside noted AMSA's advice and confirmed compliance with COLREGS and the Navigation Act 2012 was mandated aboard Woodside chartered vessels.	**(5)** No additional controls or measures are required. Woodside's impact assessment and controls related to interaction with other marine users are set out in Section 6.7.1 of the EP.
(6) AMSA noted additional information was available via its spatial gateway and	**(6)**	**(6)** Woodside noted AMSA's advice that further information was available.	**(6)** No additional controls or measures are required.

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Offshore oil and gas exploration webpage.	Woodside acknowledges that additional information is available via the sources provided by AMSA.		
Woodside has addressed feedback, claims or objections as noted above.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AMSA Navigation Safety for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given AMSA Navigation Safety sufficient information to allow AMSA Navigation Safety to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to AMSA Navigation Safety on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided AMSA Navigation Safety with information tailored to AMSA Navigation Safety by including a map of shipping density in relation to the activity, and GIS shape files.
- On 14 May 2026, AMSA Navigation Safety shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable AMSA Navigation Safety to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information in the Consultation Information Sheet, Woodside provided additional information to AMSA Navigation Safety in response to AMSA Navigation Safety's feedback (Woodside's email of 7 August 2026).

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Reasonable Period

Woodside allowed AMSA Navigation Safety a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AMSA Navigation Safety advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AMSA Navigation Safety 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AMSA Navigation Safety a reasonable period for consultation in preparation of the EP, as evidenced by its response on 14 May 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AMSA Navigation Safety is appropriate and adapted to the nature of interests of AMSA Navigation Safety:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- AMSA Navigation Safety provided feedback or objections or claims about the adverse impacts of the proposed activity to which this EP relates. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from AMSA Navigation Safety and assessed the merits of any objection or claim about the adverse impact of activities to which this EP relates.
  - Updated its JRCC notification framework for vessel activities as a result of consultation with AMSA Navigation Safety, as referenced as C 1.7 and 1.8 of the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.1.7 Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DAFF - Fisheries advising of the proposed activity (Record of Consultation, reference 6.1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries issues in Section 4.10.1 of the EP. Woodside will provide activity notifications to DAFF- Fisheries as referenced as PS 1.9 and set out in Table 7-11 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DAFF - Fisheries for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DAFF - Fisheries sufficient information to allow DAFF - Fisheries to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DAFF - Fisheries on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed DAFF - Fisheries a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to DAFF - Fisheries advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DAFF - Fisheries 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DAFF - Fisheries a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DAFF - Fisheries is appropriate and adapted to the nature of interests of DAFF - Fisheries:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DAFF – Fisheries of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DAFF - Fisheries did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DAFF - Fisheries' functions, interests or activities.

4.1.8 Department of Defence (DoD)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DoD advising of the proposed activity (Record of Consultation, reference 6.1.9), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a map of defence zones in relation to the activity (Record of Consultation, reference 6.1.3).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Defence areas overlapping the Operational Area and EMBA are set out in Section 4.10.7 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DoD for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DoD sufficient information to allow DoD to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DoD on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided DoD with information tailored to DoD by including a map of defence zones in relation to the activity.

Reasonable Period

Woodside allowed DoD a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to DoD advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DoD 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DoD a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DoD is appropriate and adapted to the nature of interests of DoD:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DoD of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DoD did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DoD's functions, interests or activities.

4.1.9 Department of Planning, Lands and Heritage (DPLH)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DPLH advising of the proposed activity (Record of Consultation, reference 6.1.20), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a list of State shipwrecks relevant to the EP (Record of Consultation, reference 6.1.5.2).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	The EP demonstrates that there are no known historic underwater heritage sites or shipwrecks within the Operational Area and credible impacts to unexpected finds of historic underwater heritage or shipwrecks as a result of planned activities are managed in accordance with Unexpected Finds Procedure and relevant legislation (Sections 4.9.8 and 6.11 of the EP). Impacts to historic underwater heritage sites or shipwrecks are not considered credible possible in the event of an unplanned hydrocarbon spill, as hydrocarbons are not expected to contact the seabed as demonstrated in Section 6.8 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DPLH for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DPLH sufficient information to allow DPLH to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DPLH on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.

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  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided DPLH with information tailored to DPLH by including a list of State shipwrecks.

Reasonable Period

Woodside allowed DPLH a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DPLH advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DPLH 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DPLH a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DPLH is appropriate and adapted to the nature of interests of DPLH:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DPLH of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DPLH did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DPLH's functions, interests or activities.

4.1.10 Department of Primary Industries and Regional Development (DPIRD)

Summary of information provided and record of consultation for this EP:

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- On 13 April 2026, Woodside emailed DPIRD advising of the proposed activity (Record of Consultation, reference 6.1.16), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with State managed fisheries issues in Section 4.10.1 of the EP. Woodside will provide activity notifications to DPIRD as referenced as PS 1.9 and set out in Table 7-11 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DPIRD for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DPIRD sufficient information to allow DPIRD to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DPIRD on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

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Reasonable Period

Woodside allowed DPIRD a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DPIRD advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DPIRD 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DPIRD a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DPIRD is appropriate and adapted to the nature of interests of DPIRD:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DPIRD of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DPIRD did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DPIRD's functions, interests or activities.

4.1.11 Department of Transport and Major Infrastructure (DTMI)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DTMI advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 14 July 2026, Woodside emailed DTMI a copy of the Oil Pollution First Strike Plan for this EP (Appendix I) for DTMI's review (SI Report A, reference 5.1). Woodside also provided another link to the Consultation Information Sheet.
- On 20 July 2026, Woodside emailed DTMI advising of an update to the Oil Pollution First Strike Plan (SI Report A, reference 5.2) and attached a revised copy of the FSP for DTMI's review (Appendix H).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside will consult DTMI if there is a spill impacting State waters from the proposed activity, as referenced in the Oil Pollution First Strike Plan (Appendix H). No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DTMI for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DTMI sufficient information to allow DTMI to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DTMI on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, on 14 July 2026, Woodside provided DTMI with the Oil Pollution First Strike Plan for its review and feedback.

Reasonable Period

Woodside allowed DTMI a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DTMI advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.

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- Woodside's methodology allows a 30-day consultation period and Woodside allowed DTMI 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DTMI a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DTMI is appropriate and adapted to the nature of interests of DTMI:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DTMI of the opportunity to provide feedback.
- In addition, on 14 July 2026 and 20 July 2026, Woodside provided DTMI with a copy of the Oil Pollution First Strike Plan, giving DTMI further opportunities to provide feedback on the activity.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DTMI did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DTMI's functions, interests or activities.

4.1.12 Pilbara Ports

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Pilbara Ports advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 17 April 2026, Pilbara Ports emailed and advised it had conducted initial internal consultations with its Marine West operations team in relation to the activity (SI Report A, reference 6.1). Pilbara Ports also raised **(1)**.
- On 17 April 2026, Woodside responded thanking Pilbara Ports for its email (SI Report A, reference 6.2). Woodside responded to **(1)**. Woodside attached the EMBA shape files to the email.
- On 21 April 2026, Pilbara Ports thanked Woodside for its reply and shape files (SI Report A, reference 6.3). Pilbara Ports raised **(2)** and **(3)**.
- On 21 April 2026, Woodside and Pilbara Ports exchanged a further four emails (SI Report A, references 6.4 to 6.7) clarifying an administrative error which did not affect the content of Pilbara Ports' feedback.

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- On 15 June 2026, Woodside thanked Pilbara Ports for its feedback (SI Report A, reference 6.8). Woodside responded to **(2)** and **(3)** and attached a port boundaries map.
- On 15 June 2026, Pilbara Ports thanked Woodside for its email (SI Report A, reference 6.9). Pilbara Ports noted some outdated terminology in the map provided by Woodside and directed Woodside to its website for correct terminology.
- On 16 June 2026, Woodside thanked Pilbara Ports for flagging the terminology (SI Report A, reference 6.10). Woodside provided an updated map (Record of Consultation, reference 6.1.7).
- On 16 June 2026, Pilbara Ports responded to thank Woodside (SI Report A, reference 6.11).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Pilbara Ports requested further detail regarding the boundaries of the EMBA, particularly in respect to the Dampier port boundary, and other port locations including Ashburton, Cape Preston and Varanus Island.	**(1)** Woodside acknowledges that Pilbara Ports requires further information regarding EMBA boundaries to make an assessment of the potential consequences of the activity of its functions, interests or activities.	**(1)** Woodside confirmed the EMBA overlapped the Ashburton, Dampier, Balla Balla, Cape Preston West and Varanus Island port areas, and advised it was providing shape files for the EMBA.	**(1)** No additional controls or measures required.
(2) Pilbara Ports noted the EMBA overlapped multiple port boundaries and requested the boundaries be included on a figure in the EP to identify the jurisdiction of Pilbara Ports.	**(2)** Woodside acknowledges Pilbara Ports request for a figure representing the port boundaries in relation to the EMBA. Woodside has created and provided a map to Pilbara Ports and included it in Appendix F as part of Woodside's consultation materials. Woodside also recognises Pilbara Ports' request for acknowledgement of its jurisdiction and has updated the FSP to include notification to Pilbara Ports in the event of a spill that may interact with Pilbara Ports' boundaries.	**(2)** Woodside provided a map depicting the EMBA in relation to Pilbara Ports' boundaries and confirmed that while infrastructure overlapped by the EMBA was not routinely included in the EP, Woodside had updated its FSP to include notifications to Pilbara Ports of any spill that might interact with its port boundaries.	**(2)** The FSP (Appendix H) for this EP has been updated to include notifications to Pilbara Ports.
(3)	**(3)**	**(3)**	**(3)**

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Pilbara Ports advised the Port handbook for each operational port could be found via a supplied link.	Woodside acknowledges it has access to the Port handbook for each operational port.	Woodside thanked Pilbara Ports for providing the link to the handbook for each operational port.	No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Pilbara Ports for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Pilbara Ports sufficient information to allow Pilbara Ports to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Pilbara Ports on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 21 April 2026, Pilbara Ports shared its feedback regarding the activity, indicating the information provided was sufficient to enable Pilbara Ports to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information in the Consultation Information Sheet, Woodside provided an additional map to Pilbara Ports in response to Pilbara Ports' feedback (Woodside's email of 16 June 2026).

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Reasonable Period

Woodside allowed Pilbara Ports a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Pilbara Ports advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Pilbara Ports 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Pilbara Ports a reasonable period for consultation in preparation of the EP, as evidenced by its response on 17 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Pilbara Ports is appropriate and adapted to the nature of interests of Pilbara Ports:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Pilbara Ports provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Pilbara Ports.
  - Included Pilbara Ports in the notifications table of the FSP (Appendix H) and included a map of port boundaries in Appendix F of the EP (Record of Consultation, reference 6.1.7).
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.1.13 Western Australian Museum (WAM)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed WAM advising of the proposed activity (Record of Consultation, reference 6.1.19), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a list of State and Commonwealth shipwrecks relevant to the EP (Record of Consultation, reference 6.1.5).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	The EP demonstrates that there are no known historic underwater heritage sites or shipwrecks within the Operational Area and credible impacts to unexpected finds of historic underwater heritage or shipwrecks as a result of planned activities are managed in accordance with Unexpected Finds Procedure and relevant legislation (Sections 4.9.8 and 6.11 of the EP). Impacts to historic underwater heritage sites or shipwrecks are not considered credible possible in the event of an unplanned hydrocarbon spill, as hydrocarbons are not expected to contact the seabed as demonstrated in Section 6.8 of the EP. As part of ongoing consultation engagements as set out in Table 7-11 of the EP, Woodside will notify WAM of any unexpected finds of potential Underwater Cultural Heritage under the Unexpected Finds Procedure (as described in Section 7.2.5 of the EP). No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with WAM for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:			

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Sufficient Information

Woodside has given WAM sufficient information to allow WAM to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to WAM on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided WAM with information tailored to WAM by including a map of list of State and Commonwealth-registered shipwrecks.

Reasonable Period

Woodside allowed WAM a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WAM advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WAM 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WAM a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WAM is appropriate and adapted to the nature of interests of WAM:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding WAM of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as WAM did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on WAM's functions, interests or activities.

4.2 Commonwealth and WA State Government departments or agencies – environment

4.2.1 Clean Energy Regulator (CER)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed CER advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 15 April 2026, CER responded thanking Woodside for its email (SI Report A, reference 7.1). CER raised **(1)** and **(2)**.
- On 15 April 2026, Woodside thanked CER for its email (SI Report A, reference 7.2). Woodside responded to **(1)** and **(2)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) CER advised it had no feedback to offer and did not require further consultation on the matter.	**(1)** Woodside acknowledges the CER has no feedback to offer and does not require further consultation on this matter. Based on prior engagements with CER, Woodside understands CER's regulatory interest is focused primarily on emissions reporting and compliance obligations under the Safeguard Mechanism and NGER framework during implementation of the activity.	**(1)** Woodside thanked CER for confirming CER had no feedback and did not require further consultation.	**(1)** No additional controls or measures are required.
(2) CER provided its standard advice regarding emissions, energy consumption and energy production reporting.	**(2)** Woodside notes CER's standard advice. Woodside complies with relevant legislative and reporting requirements.	**(2)** Woodside acknowledged CER's standard advice regarding NGER reporting obligations.	**(2)** No additional controls or measures are required. Controls related to NGERS reporting are set out in Section 6.7.7 of the EP.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with CER for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given CER sufficient information to allow CER to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to CER on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 15 April 2026, CER shared its feedback regarding this activity, indicating the information provided was sufficient to enable CER to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed CER a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to CER advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed CER 30 days for consultation.
- Consultation for this EP commenced 3 months ago.

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- In this context, Woodside allowed CER a reasonable period for consultation in preparation of the EP, as evidenced by its response on 15 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with CER is appropriate and adapted to the nature of interests of CER:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- CER provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from CER.
  - Made no changes or inclusions to the EP as a result of consultation with CER because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.2.2 Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DAFF - Biosecurity advising of the proposed activity (Record of Consultation, reference 6.1.14), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of	Vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the

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		Change and Revision process (see Section 7.10.1 of the EP).	Control and Management of Ships' Ballast Water and Sediments) to prevent introducing IMS. Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan (see Section 6.9.4 of the EP). No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DAFF - Biosecurity for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DAFF - Biosecurity sufficient information to allow DAFF - Biosecurity to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DAFF - Biosecurity on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed DAFF - Biosecurity a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DAFF - Biosecurity advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DAFF - Biosecurity 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DAFF - Biosecurity a reasonable period for consultation in preparation of the EP.

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Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DAFF - Biosecurity is appropriate and adapted to the nature of interests of DAFF - Biosecurity:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DAFF - Biosecurity of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DAFF - Biosecurity did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DAFF - Biosecurity's functions, interests or activities.

4.2.3 Department of Biodiversity, Conservation and Attractions (DBCA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DBCA advising of the proposed activity (Record of Consultation, reference 6.1.25), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 14 May 2026, DBCA emailed Woodside regarding the EP and advised it had reviewed the consultation information and other available information (SI Report A, reference 8.1). DBCA raised items **(1)** to **(12)**.
- On 10 June 2026, Woodside thanked DBCA for its feedback (SI Report A, reference 8.2). Woodside responded to **(1)** to **(12)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) DBCA noted there were a number of biologically important areas for conservation-significant species, marine	**(1)** Woodside acknowledges that there are biologically important areas which have the potential to be impacted by the	**(1)** Woodside acknowledged DBCA's feedback relating to biologically important areas, marine parks and	**(1)** No changes or additional measures required.

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parks and island conservation reserves in the EMBA which had the potential to be affected, and provided examples of publicly available information sources that should be considered.	proposed activities. Woodside has considered multiple information sources to inform its description of the existing environment and impact and risk assessments.	management areas, island conservation reserves and other conservation-significant values relevant to the petroleum activity, and advised that, in identifying potential impacts, Woodside had considered multiple information sources.	
(2) DBCA noted that given the importance of areas potentially affected by a hydrocarbon release, it was considered essential that baseline environmental values were adequately understood and documented.	**(2)** Woodside considers DBCA's feedback appropriate given the importance of understanding baseline environmental values. Woodside maintains a Management of Knowledge process under which baseline information is reviewed and updated as appropriate.	**(2)** Woodside confirmed the EP included a description of baseline environmental data for the Operational Area and EMBA and that Woodside had established a Management of Knowledge process under which baseline information was reviewed and updated as appropriate.	**(2)** No changes or additional measures required
(3) DBCA suggested it would be appropriate to briefly highlight potential impacts to important areas in the Consultation Information Sheet.	**(3)** Woodside acknowledges DBCA's interest in BIAs and conservation values in relation to the EP and welcomes a meeting with DBCA to further discuss this topic.	**(3)** Woodside advised it was available to meet with DBCA to further the discuss the EP, including how BIAs and conservation values had been considered.	**(3)** No changes or additional measures required.
(4) DBCA indicated an expectation that Woodside's 10 Scientific Monitoring Programs had established suitable baseline survey data and any existing contamination, and that where baseline information was unavailable, Woodside should assess what information was required and identify suitable methods or data sources to obtain the information.	**(4)** Woodside recognises the importance of understanding the current condition of areas within the EMBA that support key ecological values, including baseline environmental conditions and any potential contamination, and ensuring baseline environmental information is commensurate with the environmental risk associated with the proposed activity.	**(4)** Woodside confirmed environmental information used to inform the EP and associated spill response planning was derived from a combination of regional datasets, targeted surveys, scientific literature, industry studies and monitoring programs. Where relevant data gaps were identified, Woodside assessed whether additional information collection or targeted studies were warranted on a risk-informed basis.	**(4)** No changes or additional measures required.
(5)	**(5)**	**(5)**	**(5)**

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DBCA noted its expectation that Woodside engaged with Traditional Owners in a culturally sensitive manner.	Woodside has engaged with relevant Traditional Owners for this EP and feedback has been incorporated into the EP as appropriate.	Woodside advised it had undertaken consultation with relevant Traditional Owners and continued to seek engagement in a culturally appropriate manner.	No changes or additional measures required. Woodside's consultation approach with Indigenous Peoples is set out in Section 5 and its summary of consultation is set out in Appendix F, Tables 2 and 3.
(6) DBCA noted its monitoring in marine parks and reserves was to inform its values and objectives and may not be suitable for oil spill risk assessment and management planning.	**(6)** Woodside acknowledges the purpose of DBCA's monitoring program and that it may not be suitable for oil spill risk assessment.	**(6)** Woodside noted DBCA's advice regarding the scope and purpose of DBCA's marine park and reserve monitoring programs and noted that these were designed for marine park management objectives rather than oil spill risk assessment.	**(6)** No changes or additional measures required.
(7) DBCA encouraged Woodside to implement a before-after, control-impact (BACI) framework in planning and evaluating its management response.	**(7)** Woodside's Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) includes application of a BACI framework where appropriate.	**(7)** Woodside advised it had developed an OSM-BIP aligned with the Joint Industry Framework, which included processes for baseline information review, monitoring gap identification, spill response planning and application of a BACI framework where appropriate.	**(7)** No changes or additional measures required.
(8) DBCA recommended Woodside refer to DCCEEW's National Light Pollution Guidelines for Wildlife.	**(8)** Woodside has considered the National Light Pollution Guidelines for Wildlife, where relevant, in the preparation of this EP.	**(8)** Woodside acknowledged DCCEEW's guideline and noted it would consider the guideline, where relevant.	**(8)** No changes or additional measures required.
(9) DBCA requested that in the event of a hydrocarbon release, DBCA's Pilbara office was notified as soon as practicable.	**(9)** Woodside has committed to notifying DBCA's Pilbara office as soon as practicable in the event of a hydrocarbon release.	**(9)** Woodside advised its Oil Pollution First Strike Plan included a commitment to notify DBCA's Pilbara office as soon as practicable where oiled wildlife could occur or where a spill could contact DBCA-managed lands or waters.	**(9)** No changes or additional measures required. The FSP for this EP is at Appendix H.
(10)	**(10)**	**(10)**	**(10)**

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DBCA noted it would not implement an oiled wildlife management response on behalf of an operator except as part of a mandated whole-of-government response.	Woodside recognises DBCA's position that it will not implement an oiled wildlife management response on behalf of an operator.	Woodside acknowledged DBCA's advice on oiled wildlife management responses and advised it would undertake response activities in consultation with relevant agencies and in accordance with applicable emergency response arrangements.	No changes or additional measures required.
(11) Advised Woodside to refer to the Department of Transport's web content regarding marine pollution.	**(11)** Woodside refers to DTMI guidance regarding marine pollution.	**(11)** Woodside advised it had reviewed and referenced DTMI's marine pollution guidance.	**(11)** No changes or additional measures required.
(12) Provided the email address it wished Woodside to continue using for notifications.	**(12)** Woodside has reviewed its contact details for DBCA.	**(12)** Woodside confirmed it would continue to provide future consultation and notifications via the nominated email address.	**(12)** No changes or additional measures required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DBCA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given DBCA sufficient information to allow DBCA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:			

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DBCA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 14 May 2026, DBCA shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DBCA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information in the Consultation Information Sheet, Woodside provided additional information to DBCA in response to DBCA's feedback (Woodside's email of 10 June 2026).

Reasonable Period

Woodside allowed DBCA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DBCA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DBCA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DBCA a reasonable period for consultation in preparation of the EP, as evidenced by its response on 14 May 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DBCA is appropriate and adapted to the nature of interests of DBCA:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DBCA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- DBCA provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:

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- Responded to feedback from DBCA.
- Made no changes or inclusions to the EP as a result of consultation with DBCA because appropriate measures are already included in the EP.

- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.2.4 Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DCCEEW advising of the proposed activity (Record of Consultation, reference 6.1.19), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a list of State and Commonwealth shipwrecks relevant to the EP (Record of Consultation, reference 6.1.5).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	The EP demonstrates that there are no known historic underwater heritage sites or shipwrecks within the Operational Area and credible impacts to unexpected finds of historic underwater heritage or shipwrecks as a result of planned activities are managed in accordance with Unexpected Finds Procedure and relevant legislation (Sections 4.9.8 and 6.11 of the EP). Impacts to historic underwater heritage sites or shipwrecks are not considered credible possible in the event of an unplanned hydrocarbon spill, as hydrocarbons are not expected to contact the seabed as demonstrated in Section 6.8 of the EP. No additional measures or controls are required.

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Summary Report – Consultation Complete
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DCCEEW for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given DCCEEW sufficient information to allow DCCEEW to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because: • The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DCCEEW on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included: – The purpose of consultation and set out what was being sought through consultation. – A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures. – A timeframe for consultation and the provision of feedback. – A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*. – Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations). • In addition to the Consultation Information Sheet, Woodside provided DCCEEW with information tailored to DCCEEW by including a map of list of State and Commonwealth-registered shipwrecks. **Reasonable Period** Woodside allowed DCCEEW a reasonable period for consultation in the preparation of the EP because: • A consultation period was stated in the initial correspondence to DCCEEW advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission. • Woodside's methodology allows a 30-day consultation period and Woodside allowed DCCEEW 30 days for consultation. • Consultation for this EP commenced 3 months ago. • In this context, Woodside allowed DCCEEW a reasonable period for consultation in preparation of the EP. **Reasonable Opportunity** A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DCCEEW is appropriate and adapted to the nature of interests of DCCEEW: • Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation. • Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation. • In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DCCEEW of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DCCEEW did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DCCEEW's functions, interests or activities.

4.2.5 Director of National Parks (DNP)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DNP advising of the proposed activity (Record of Consultation, reference 6.1.15), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided GIS shape files for the Operational Area and EMBA.
- On 30 April 2026, DNP responded thanking Woodside for the opportunity to comment (SI Report A, reference 9.1). DNP raised items **(1)** to **(6)**.
- On 8 June 2026, Woodside thanked DNP for its feedback (SI Report A, reference 9.2). Woodside responded to items **(1)** to **(6)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) DNP confirmed a small portion of the Operational Area overlapped the Montebello Marine Park Multiple Use Zone (MUZ) and outlined restricted mining operations in accordance with the North-west Marine Parks Network Management Plan 2018.	**(1)** Woodside acknowledges the Operational Area overlap with the Montebello Marine Park MUZ and has and has referred to the North-west Marine Parks Management Plan 2018 for this EP.	**(1)** Woodside noted DNP's advice regarding the overlap with the Montebello Marine Park MUZ and acknowledged the management plan.	**(1)** No additional controls or measures are required. A list of protected places in relation to the activity is set out in Section 4.8 of the EP.
(2) DNP advised that activities in the Multiple Use Zone could be authorised via class approval subject to an accepted EP and compliance with conditions, and noted that Woodside	**(2)** Woodside acknowledges the need for authorisations and understands its obligations under the class approval.	**(2)** Woodside confirmed it was aware of its obligations under the class approval.	**(2)** No additional controls or measures are required. A description of relevant requirements for Australian Marine Parks, including class approvals, is set out in Section 1.7.2.3 of the EP.

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should be aware of its obligations under the class approval.			
(3) DNP acknowledged Woodside's consideration of NOPSEMA and Parks Australia guidance including the need to reduce impacts and risks to marine park values to as low as reasonably practicable and not inconsistent with the management plan.	**(3)** Woodside has considered guidance from NOPSEMA and Parks Australia and the EP demonstrates that impacts and risks to marine park values have been reduced to ALARP and not consistent with the management plan.	**(3)** Woodside confirmed the EP had been prepared with consideration of the NOPSEMA and Parks Australia guidance.	**(3)** No additional controls or measures are required. Consideration of potential impacts and risks and associated controls are set out in Section 6 of the EP.
(4) DNP stated that impacts and risks should be assessed against marine park values, including natural, cultural, heritage and socio-economic values, referenced examples specific to Montebello Marine Park, and provided links to additional information sources on marine park values	**(4)** Woodside has considered impacts and risks associated with the Montebello Marine Park, including values such as the ancient coastline ecosystem, internesting marine turtles, foraging sea birds, whale sharks and migrating humpback whales.	**(4)** Woodside confirmed it had considered the impacts and risks associated with the proposed activities in the context of the Montebello Marine Park, including relevant natural, cultural, heritage and socio-economic values.	**(4)** No additional controls or measures are required. A description of Montebello Marine Park values is set out in Section 4.8.1 of the EP.
(5) DNP requested that it be notified as soon as possible of any oil or gas pollution incidents affecting or likely to affect a marine park, outlined the information it required from the notification, and noted DNP might request regular situation reports depending on the severity of an incident.	**(5)** Woodside acknowledges DNP's expectations and in the highly unlikely event of a hydrocarbon release, Woodside will notify DNP as soon as practicable via the 24-hour Marine Compliance Officer if the incident occurs within a marine park or is likely to impact a marine park.	**(5)** Woodside advised that, in the event of a hydrocarbon release, it would notify DNP as soon as practicable where the incident occurred in, or was likely to impact on, a marine park.	**(5)** As set out in the Oil Pollution First Strike Plan (Appendix H), Woodside will notify DNP as soon as practicable where an incident occurs in, or is like to impact on, a marine park.
(6) DNP requested notification when the EP was approved, as well as at least 10 days prior to, and at the conclusion of, activities within a marine park.	**(6)** Woodside agrees to notify DNP upon acceptance of the EP, and prior to and on completion of activities occurring within a marine park.	**(6)** Woodside advised it would notify DNP upon acceptance of the EP by NOPSEMA, as well as at least 10 days before, and on completion of, activities occurring within a marine park.	**(6)** As referenced as C 1.10 and set out in Table 7-11 of the EP, Woodside will notify DNP upon acceptance of the EP and before and after activities occurring within a marine park.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	The EP demonstrates how Woodside will identify and manage all impacts and risks on Australian marine park values (including ecosystem values) to an ALARP and acceptable level and that the activity is not inconsistent with the management plan (see Section 6.8 of the EP). No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DNP for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DNP sufficient information to allow DNP to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DNP on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- In addition to the Consultation Information Sheet, Woodside provided DNP with information tailored to DNP by including GIS shape files.
- On 30 April 2026, DNP shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable DNP to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.
- In addition to the information in the Consultation Information Sheet, Woodside provided additional information to DNP in response to DNP's feedback (Woodside's email of 8 June 2026).

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Reasonable Period

Woodside allowed DNP a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DNP advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DNP 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DNP a reasonable period for consultation in preparation of the EP, as evidenced by its response on 30 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DNP is appropriate and adapted to the nature of interests of DNP:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- DNP provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from DNP.
  - Updated its standard schedule of notifications to DNP based on DNP's feedback, as set out in C 1.10 of the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.2.6 Ningaloo Coast World Heritage Advisory Committee (NCWHAC)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed NCWHAC advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with NCWHAC for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given NCWHAC sufficient information to allow NCWHAC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to NCWHAC on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed NCWHAC a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to NCWHAC advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed NCWHAC 30 days for consultation.

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- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed NCWHAC a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with NCWHAC is appropriate and adapted to the nature of interests of NCWHAC:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- (If applicable) From (dates), Woodside held, or hosted information stalls at, a number of community events and roadshows in regional areas including the (insert areas) to raise awareness of the EP and provide another opportunity for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding NCWHAC of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as NCWHAC did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on NCWHAC's functions, interests or activities.

4.3 Commonwealth and WA State Government departments or agencies – industry

4.3.1 Department of Mines, Petroleum and Exploration (DMPE)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DMPE advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DMPE for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DMPE sufficient information to allow DMPE to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DMPE on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed DMPE a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DMPE advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DMPE 30 days for consultation.

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- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DMPE a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DMPE is appropriate and adapted to the nature of interests of DMPE:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DMPE of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DMPE did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DMPE's functions, interests or activities.

4.3.2 Department of Industry, Science and Resources (DISR)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DISR advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate,	No additional measures or controls are required.

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		Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with DISR for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given DISR sufficient information to allow DISR to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to DISR on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed DISR a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to DISR advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed DISR 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed DISR a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with DISR is appropriate and adapted to the nature of interests of DISR:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding DISR of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as DISR did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on DISR's functions, interests or activities.

4.4 Commonwealth commercial fisheries and peak representative bodies

4.4.1 Australian Southern Bluefin Tuna Industry Association (ASBTIA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed ASBTIA advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries in Section 4.10.1 of the EP. No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with ASBTIA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ASBTIA sufficient information to allow ASBTIA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to ASBTIA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed ASBTIA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to ASBTIA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed ASBTIA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed ASBTIA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with ASBTIA is appropriate and adapted to the nature of interests of ASBTIA:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding ASBTIA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- No additional measures were considered as a result of consultation as ASBTIA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

The measures and controls described in this EP address the potential impact from the proposed activity on ASBTIA's functions, interests or activities.

4.4.2 Commonwealth Fisheries Association (CFA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed CFA advising of the proposed activity (Record of Consultation, reference 6.1.12), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries issues in Section 4.10.1 of the EP. Woodside will provide activity notifications to CFA as referenced as PS 1.9 and set out in Table 7-11 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with CFA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given CFA sufficient information to allow CFA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to CFA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed CFA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to CFA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed CFA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed CFA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with CFA is appropriate and adapted to the nature of interests of CFA:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding CFA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as CFA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on CFA's functions, interests or activities.

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4.4.3 North West Slope Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed individual North West Slope Trawl Fishery licence holders advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries issues in Section 4.10.1 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with North West Slope Trawl Fishery licence holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given North West Slope Trawl Fishery licence holders sufficient information to allow North West Slope Trawl Fishery licence holders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to North West Slope Trawl Fishery licence holders on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.

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– Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed North West Slope Trawl Fishery licence holders a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to North West Slope Trawl Fishery licence holders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed North West Slope Trawl Fishery licence holders 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed North West Slope Trawl Fishery licence holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with North West Slope Trawl Fishery licence holders is appropriate and adapted to the nature of interests of North West Slope Trawl Fishery licence holders:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding North West Slope Trawl Fishery licence holders of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as North West Slope Trawl Fishery licence holders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on North West Slope Trawl Fishery licence holders' functions, interests or activities.

4.4.4 Tuna Australia

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Tuna Australia advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.

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• On 20 April 2026, Tuna Australia emailed thanking Woodside for the consultation (SI Report A, reference 10.1). Tuna Australia raised **(1)** and **(2)** and noted that its contractual services were available to Woodside. Tuna Australia also attached its position statement and consulting services agreement. • On 12 May 2026, Woodside thanked Tuna Australia for its email (SI Report A, reference 10.2). Woodside responded to **(1)** and **(2)** and acknowledged Tuna Australia's information on its position statement and consultation services.			
Summary of Feedback, Objection or Claim	**Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity**	**Woodside's Statement of Response**	**Inclusion in Environment Plan**
(1) Tuna Australia stated it had not been involved in the initial consultation for this project and would need to run a full consultation on the proposed activity.	**(1)** This consultation represents the initial consultation for the five-year revision of the EP and provides Tuna Australia the opportunity to consider the proposed activity. Woodside has provided Tuna Australia sufficient information to allow Tuna Australia to make an informed assessment of the possible consequences of the activity on its functions, interests or activities. The in-force GWA Facility Operations EP is also publicly available on the NOPSEMA website. Woodside has consulted Tuna Australia on the associated GWF-4 Drilling and Installation EP.	**(1)** Woodside advised this consultation represented consultation for the five-year revision of the EP, and that the in-force EP had been accepted in 2022. Woodside confirmed it had also consulted Tuna Australia for the GWF-4 Drilling and Installation EP.	**(1)** No additional controls or measures required.
(2) Tuna Australia advised it could reach out to relevant licence holders for this EP and would require a services agreement to complete this work due to resourcing and time constraints.	**(2)** Woodside has directly consulted relevant individual Commonwealth fishery licence holders for this EP.	**(2)** Woodside confirmed that as the Western Tuna and Billfish Fishery had been active in the EMBA within the past five years, Woodside had consulted individual WTBF licence holders for this EP.	**(2)** No additional controls or measures required. Woodside's assessment of relevance for Commonwealth fisheries is set out in Appendix F, Table 1, and the summary of consultation in Appendix F, Table 2.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback	Woodside has assessed the potential for interaction with Commonwealth

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	the EP relates, as required under Regulation 24.	may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	managed commercial fisheries in Section 4.10.1 of the EP. No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Tuna Australia for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Tuna Australia sufficient information to allow Tuna Australia to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Tuna Australia on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Tuna Australia a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Tuna Australia advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Tuna Australia 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Tuna Australia a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Tuna Australia is appropriate and adapted to the nature of interests of Tuna Australia:

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- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 12 May 2026 in response to items raised by Tuna Australia related to the consultation for this EP.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Tuna Australia provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Tuna Australia.
  - Made no changes or inclusions to the EP as a result of consultation with Tuna Australia because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.4.5 Western Deepwater Trawl Fishery

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Western Deepwater Trawl Fishery licence holders advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries in Section 4.10.1 of the EP. No additional controls or measures are required.

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Summary Report – Consultation Complete
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Western Deepwater Trawl Fishery licence holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given Western Deepwater Trawl Fishery licence holders sufficient information to allow Western Deepwater Trawl Fishery licence holders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because: • The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Western Deepwater Trawl Fishery licence holders on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included: – The purpose of consultation and set out what was being sought through consultation. – A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures. – A timeframe for consultation and the provision of feedback. – A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*. – Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations). **Reasonable Period** Woodside allowed Western Deepwater Trawl Fishery licence holders a reasonable period for consultation in the preparation of the EP because: • A consultation period was stated in the initial correspondence to Western Deepwater Trawl Fishery licence holders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission. • Woodside's methodology allows a 30-day consultation period and Woodside allowed Western Deepwater Trawl Fishery licence holders 30 days for consultation. • Consultation for this EP commenced 3 months ago. • In this context, Woodside allowed Western Deepwater Trawl Fishery licence holders a reasonable period for consultation in preparation of the EP. **Reasonable Opportunity** A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Western Deepwater Trawl Fishery licence holders is appropriate and adapted to the nature of interests of Western Deepwater Trawl Fishery licence holders: • Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation. • Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation. • Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.

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- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Western Deepwater Trawl Fishery licence holders of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Western Deepwater Trawl Fishery licence holders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Western Deepwater Trawl Fishery licence holders' functions, interests or activities.

4.4.6 Western Tuna and Billfish Fishery (WTBF)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed individual WTBF licence holders advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries in Section 4.10.1 of the EP. No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with WTBF licence holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:			

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Sufficient Information

Woodside has given WTBF licence holders sufficient information to allow WTBF licence holders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to WTBF licence holders on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed WTBF licence holders a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WTBF licence holders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WTBF licence holders 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WTBF licence holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WTBF licence holders is appropriate and adapted to the nature of interests of WTBF licence holders:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding WTBF licence holders of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as WTBF licence holders did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on WTBF licence holders' functions, interests or activities.

4.5 State commercial fisheries and peak representative bodies

4.5.1 Aquaculture Council of Western Australia (ACWA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed ACWA advising of the proposed activity (Record of Consultation, reference 6.1.26), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with ACWA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given ACWA sufficient information to allow ACWA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to ACWA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed ACWA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to ACWA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed ACWA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed ACWA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with ACWA is appropriate and adapted to the nature of interests of ACWA:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding ACWA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as ACWA did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on ACWA's functions, interests or activities.

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4.5.2 Western Australian Fishing Industry Council (WAFIC)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed WAFIC advising of the proposed activity (Record of Consultation, reference 6.1.23), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 20 April 2026, WAFIC emailed Woodside to confirm the consultation material had been distributed to relevant licence holders (SI Report A, reference 11.1).
- On 1 May 2026, Woodside emailed WAFIC to advise that, to ensure licence holders had adequate time to review the consultation materials following their distribution, the consultation close date for WAFIC and licence holders had been extended to 20 May 2026 (SI Report A, reference 11.2).
- On 3 June 2026, Woodside emailed WAFIC to follow up on whether WAFIC or licence holders had any feedback on a number of Woodside EPs, including this EP (SI Report A, reference 11.3).
- On 4 June 2026, WAFIC emailed Woodside regarding this EP (SI Report A, reference 11.4). WAFIC noted **(1)**.
- On 5 June 2026, Woodside thanked WAFIC for its email (SI Report A, reference 11.5). Woodside responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) WAFIC advised no comments or industry feedback was received regarding the proposed activities.	**(1)** Woodside acknowledges that neither WAFIC nor individual licence holders had comments or feedback regarding the activities.	**(1)** Woodside thanked WAFIC for confirming there were no comments or industry feedback.	**(1)** No additional measures or controls required.
While feedback has been received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside will provide activity notifications to WAFIC as referenced as PS 1.9 and set out in Table 7-11 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation WAFIC for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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Sufficient Information

Woodside has given WAFIC sufficient information to allow WAFIC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to WAFIC on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed WAFIC a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WAFIC advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WAFIC 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WAFIC a reasonable period for consultation in preparation of the EP, as evidenced by its response on 4 June 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WAFIC is appropriate and adapted to the nature of interests of WAFIC:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In May 2026, Woodside held an information stall at a community event in the Pilbara region to raise awareness of the EP and provide another opportunity for feedback. This event was promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 1 May 2026, reminding WAFIC of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

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- WAFIC provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from WAFIC.
  - Made no inclusions to the EP as a result of consultation with WAFIC because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.5.3 Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery (collectively State Fishery Licence Holders)

Summary of information provided and record of consultation for this EP:

- On 20 April 2026, Woodside, via WAFIC, emailed State Fishery Licence Holders advising of the proposed activity (Record of Consultation, reference 6.1.24), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- As per advice from WAFIC regarding its consultation guidelines, no follow-up email was required to State Fishery Licence Holders.
- On 4 June 2026, WAFIC confirmed State Fishery Licence Holders had not provided any feedback or comments in relation to this EP (SI Report A, reference 11.3).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with State-managed fisheries in Section 4.10.1 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with State Fishery Licence Holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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Sufficient Information

Woodside has given State Fishery Licence Holders sufficient information to allow State Fishery Licence Holders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Via WAFIC, Woodside gave this information to State Fishery Licence Holders on 20 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed State Fishery Licence Holders a reasonable period for consultation in the preparation of the EP because:

- Woodside's methodology allows a 30-day consultation period and Woodside allowed State Fishery Licence Holders 30 days for consultation. This included an extension of the consultation period, communicated via WAFIC, to accommodate changes to the distribution date of the consultation material.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed State Fishery Licence Holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with State Fishery Licence Holders is appropriate and adapted to the nature of interests of State Fishery Licence Holders:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as State Fishery Licence Holders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

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- The measures and controls described in this EP address the potential impact from the proposed activity on State Fishery Licence Holders' functions, interests or activities.

4.5.4 West Coast Rock Lobster Fishery

Summary of information provided and record of consultation for this EP:

- On 15 April 2026, Woodside sent letters to individual West Coast Rock Lobster Fishery licence holders advising of the proposed activity (Record of Consultation, reference 6.1.27), provided a Consultation Information Sheet, and a QR code link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up letter (Record of Consultation, reference 6.2.2).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries issues in Section 4.10.1 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with West Coast Rock Lobster Fishery licence holders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given West Coast Rock Lobster Fishery licence holders sufficient information to allow West Coast Rock Lobster Fishery licence holders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to West Coast Rock Lobster Fishery licence holders on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed West Coast Rock Lobster Fishery licence holders a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to West Coast Rock Lobster Fishery licence holders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed West Coast Rock Lobster Fishery licence holders 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed West Coast Rock Lobster Fishery licence holders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with West Coast Rock Lobster Fishery licence holders is appropriate and adapted to the nature of interests of West Coast Rock Lobster Fishery licence holders:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation letter on 4 May 2026, reminding West Coast Rock Lobster Fishery licence holders of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as West Coast Rock Lobster Fishery licence holders did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on West Coast Rock Lobster Fishery licence holders' functions, interests or activities.

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4.5.5 Western Rock Lobster Council

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Western Rock Lobster Council advising of the proposed activity (Record of Consultation, reference 6.1.26), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with State managed commercial fisheries in Section 4.10.1 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Western Rock Lobster Council for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Western Rock Lobster Council sufficient information to allow Western Rock Lobster Council to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Western Rock Lobster Council on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.

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- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Western Rock Lobster Council a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Western Rock Lobster Council advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Western Rock Lobster Council 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Western Rock Lobster Council a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Western Rock Lobster Council is appropriate and adapted to the nature of interests of Western Rock Lobster Council:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Western Rock Lobster Council of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Western Rock Lobster Council did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Western Rock Lobster Council's functions, interests or activities.

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4.6 Recreational marine users and peak representative bodies

4.6.1 Gascoyne Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Gascoyne Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.1.17), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 15 April 2026, Woodside mailed a letter with the same information to marine users without a designated email address (Record of Consultation, reference 6.1.17.1).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email or letter (Record of Consultation, references 6.2.1 and 6.2.2).
- On 6 May 2026, a licence holder emailed Woodside (SI Report A, reference 12.1) and raised **(1)**.
- On 7 May 2026, Woodside responded thanking the licence holder for their email (SI Report A, reference 12.2) and responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) A licence holder requested to be removed from Woodside's mailing list.	**(1)** Woodside accepts that participation in the consultation process is voluntary and has removed the licence holder from its mailing list.	**(1)** Woodside confirmed the licence holder had been removed from Woodside's mailing list.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Gascoyne Recreational Marine Users for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Gascoyne Recreational Marine Users sufficient information to allow Gascoyne Recreational Marine Users to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Gascoyne Recreational Marine Users on 13 or 15 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link or QR code to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Gascoyne Recreational Marine Users a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Gascoyne Recreational Marine Users advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Gascoyne Recreational Marine Users 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Gascoyne Recreational Marine Users a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Gascoyne Recreational Marine Users is appropriate and adapted to the nature of interests of Gascoyne Recreational Marine Users:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email or letter on 4 May 2026, reminding Gascoyne Recreational Marine Users of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Gascoyne Recreational Marine Users provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from a Gascoyne Recreational Marine User.
  - Made no changes or inclusions to the EP as a result of consultation with Gascoyne Recreational Marine Users because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.6.2 Marine Tourism WA

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Marine Tourism WA advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Marine Tourism WA for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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Sufficient Information

Woodside has given Marine Tourism WA sufficient information to allow Marine Tourism WA to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Marine Tourism WA on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Marine Tourism WA a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Marine Tourism WA advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Marine Tourism WA 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Marine Tourism WA a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Marine Tourism WA is appropriate and adapted to the nature of interests of Marine Tourism WA:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Marine Tourism WA of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Marine Tourism WA did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Marine Tourism WA's functions, interests or activities.

4.6.3 Pilbara/Kimberley Recreational Marine Users

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Pilbara/Kimberley Recreational Marine Users advising of the proposed activity (Record of Consultation, reference 6.1.17), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 15 April 2026, Woodside mailed a letter with the same information to marine users without a designated email address (Record of Consultation, reference 6.1.17.1).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email or letter (Record of Consultation, references 6.2.1 and 6.2.2).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Pilbara/Kimberley Recreational Marine Users for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Pilbara/Kimberley Recreational Marine Users sufficient information to allow Pilbara/Kimberley Recreational Marine Users to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Pilbara/Kimberley Recreational Marine Users on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:

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- The purpose of consultation and set out what was being sought through consultation.
- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- A link or QR code to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Pilbara/Kimberley Recreational Marine Users a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Pilbara/Kimberley Recreational Marine Users advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Pilbara/Kimberley Recreational Marine Users 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Pilbara/Kimberley Recreational Marine Users a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Pilbara/Kimberley Recreational Marine Users is appropriate and adapted to the nature of interests of Pilbara/Kimberley Recreational Marine Users:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email or letter on 4 May 2026, reminding Pilbara/Kimberley Recreational Marine Users of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Pilbara/Kimberley Recreational Marine Users did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Pilbara/Kimberley Recreational Marine Users' functions, interests or activities.

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4.6.4 Recfishwest

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Recfishwest advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 18 May 2026, Recfishwest emailed thanking Woodside for the consultation information (SI Report A, reference 13.1). Recfishwest raised **(1)** and **(2)**.
- On 29 May 2026, Woodside thanked Recfishwest for its email (SI Report A, reference 13.2). Woodside responded to **(1)** and **(2)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Recfishwest noted the location of the activities and advised the general area may still accessed by the charter industry and large recreational vessels.	**(1)** Woodside acknowledges Recfishwest's advice that the general area may be used for charter activity and recreational vessels, and has consulted recreational marine users in the Gascoyne and Pilbara/Kimberley regions for this EP.	**(1)** Woodside noted Recfishwest's advice regarding charter and recreational vessel activity in the area.	**(1)** Woodside's summary of consultation with recreational marine users is set out in Appendix F, Table 2. No additional controls or measures are required.
(2) Recfishwest requested Woodside keep it informed as activities progressed.	**(2)** Woodside acknowledges Recfishwest's request to be kept informed and will include Recfishwest in start of activity notifications associated with this EP.	**(2)** Woodside confirmed it would keep Recfishwest informed of significant changes to the proposed activity, and would notify Recfishwest prior to activities where vessels would be in the Operational Area for more than three weeks.	**(2)** Woodside will provide notifications to Recfishwest as standard practice, as referenced as C 1.9 and set out in Table 7-11 of the EP.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its	No additional controls or measures are required.

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		Management of Change and Revision process (see Section 7.10.1 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Recfishwest for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Recfishwest sufficient information to allow Recfishwest to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Recfishwest on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Recfishwest a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Recfishwest advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Recfishwest 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Recfishwest a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Recfishwest is appropriate and adapted to the nature of interests of Recfishwest:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Recfishwest of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Recfishwest provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Recfishwest.
  - Made no changes or inclusions to the EP as a result of consultation with Recfishwest because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.6.5 WA Game Fishing Association

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed WA Game Fishing Association advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with WA Game Fishing Association for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given WA Game Fishing Association sufficient information to allow WA Game Fishing Association to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to WA Game Fishing Association on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed WA Game Fishing Association a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to WA Game Fishing Association advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed WA Game Fishing Association 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed WA Game Fishing Association a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with WA Game Fishing Association is appropriate and adapted to the nature of interests of WA Game Fishing Association:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding WA Game Fishing Association of the opportunity to provide feedback.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as WA Game Fishing Association did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on WA Game Fishing Association's functions, interests or activities.

4.7 Titleholders and operators

4.7.1 Bounty Oil and Gas, Carnarvon Energy; Coastal Oil and Gas; ExxonMobil Australia; Finder Energy; INPEX Alpha; Jadestone; JX Nippon O&G Exploration; KATO Energy/ KATO Corowa/KATO NWS/KATO Amulet; Kyushu Electric Wheatstone; PE Wheatstone; Shell Australia; Western Gas (collectively: Titleholders)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Titleholders advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Titleholders for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Titleholders sufficient information to allow Titleholders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Titleholders on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Titleholders a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Titleholders advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Titleholders 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Titleholders a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Titleholders is appropriate and adapted to the nature of interests of Titleholders:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Titleholders did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Titleholders' functions, interests or activities.

4.7.2 BP Australia

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed BP Australia advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 29 April 2026, BP responded thanking Woodside for the information (SI Report A, reference 14.1). BP raised **(1).**
- On 30 April 2026, Woodside responded thanking BP Australia for its responses on a number of Woodside EPs including this one (SI Report A, reference 14.2). Woodside responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) BP acknowledged that, as a JV partner and with titles overlapping the EMBA, the proposed activity had the potential to impact BP Australia's functions, interests or activities, however it considered the impacts and risks identified would be appropriately managed, and had no objections or other feedback.	**(1)** Woodside notes BP has considered the impacts and risks associated with the activity and has no objections or feedback.	**(1)** Woodside thanked BP Australia for confirming it had no objections or feedback.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

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Summary Report – Consultation Complete
Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with BP Australia for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically: **Sufficient Information** Woodside has given BP Australia sufficient information to allow BP Australia to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because: • The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Titleholders on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included: – The purpose of consultation and set out what was being sought through consultation. – A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures. – A timeframe for consultation and the provision of feedback. – A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.* – Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations). • On 29 April 2026, BP Australia shared its feedback regarding this activity, indicating the information provided was sufficient to enable BP Australia to make an informed assessment of the possible consequences of the activity on its functions, interests or activities. **Reasonable Period** Woodside allowed BP Australia a reasonable period for consultation in the preparation of the EP because: • A consultation period was stated in the initial correspondence to BP Australia advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission. • Woodside's methodology allows a 30-day consultation period and Woodside allowed BP Australia 30 days for consultation. • Consultation for this EP commenced 3 months ago. • In this context, Woodside allowed BP Australia a reasonable period for consultation in preparation of the EP, as evidenced by its response on 29 April 2026. **Reasonable Opportunity** A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with BP Australia is appropriate and adapted to the nature of interests of BP Australia: • Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation. • Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- BP Australia provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from BP Australia.
  - Made no changes or inclusions to the EP as a result of consultation with BP Australia because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.3 Chevron Australia

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Titleholders advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'* and GIS shape files.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 13 May 2026, Chevron emailed to thank Woodside for its consideration of Chevron in relation to the planned activities (SI Report A, reference 15.1). Chevron raised **(1)**.
- On 14 May 2026, Woodside thanked Chevron for its response (SI Report A, reference 15.2). Woodside responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Chevron advised it had no concerns or feedback regarding the proposed activities.	**(1)** Woodside acknowledges that Chevron has no concerns or feedback.	**(1)** Woodside thanked Chevron for confirming it had no objections or feedback.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be	No additional controls or measures are required.

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		received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Chevron for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Chevron sufficient information to allow Titleholders to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Chevron on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 13 May 2026, Chevron shared its feedback regarding this activity, indicating the information provided was sufficient to enable Chevron to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed Chevron a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Chevron advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Chevron 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Chevron a reasonable period for consultation in preparation of the EP, as evidenced by its response on 13 May 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Chevron is appropriate and adapted to the nature of interests of Chevron:

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- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Chevron provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Chevron.
  - Made no changes or inclusions to the EP as a result of consultation with Chevron because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.4 InCapture

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed InCapture advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 15 April 2026, InCapture emailed thanking Woodside for providing details of the EP (SI Report A, reference 16.1). InCapture also raised **(1)**.
- On 15 April 2026, Woodside thanked InCapture for its response (SI Report A, reference 16.2). Woodside responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) InCapture advised it had no objections regarding the proposed activity.	**(1)** Woodside acknowledges that InCapture has no objections to the proposed activity.	**(1)** Woodside thanked InCapture for confirming it had no objections.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing	No additional controls or measures are required.

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	the EP relates, as required under Regulation 24.	consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with InCapture for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given InCapture sufficient information to allow InCapture to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to InCapture on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 15 April 2026, InCapture shared its feedback regarding this activity, indicating the information provided was sufficient to enable InCapture to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed InCapture a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to InCapture advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed InCapture 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed InCapture a reasonable period for consultation in preparation of the EP, as evidenced by its response on 15 April 2026.

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Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with InCapture is appropriate and adapted to the nature of interests of InCapture:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- InCapture provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from InCapture.
  - Made no changes or inclusions to the EP as a result of consultation with InCapture because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.5 KUFPEC

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Titleholders advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 5 May 2026, KUFPEC thanked Woodside for its communication regarding this EP (SI Report A, reference 17.1). KUFPEC raised **(1)**.
- On 6 May 2026, Woodside thanked KUFPEC for its email (SI Report A, reference 17.2). Woodside responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) KUFPEC advised it had no objections regarding the proposed activity.	**(1)** Woodside acknowledges that KUFPEC has no objections to the proposed activity.	**(1)** Woodside thanked KUFPEC for confirming it had no objections.	**(1)** No additional controls or measures are required.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with KUFPEC for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given KUFPEC sufficient information to allow KUFPEC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to KUFPEC on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 5 May 2026, KUFPEC shared its feedback regarding this activity, indicating the information provided was sufficient to enable KUFPEC to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed KUFPEC a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to KUFPEC advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed KUFPEC 30 days for consultation.

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- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed KUFPEC a reasonable period for consultation in preparation of the EP, as evidenced by its response on 5 May 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with KUFPEC is appropriate and adapted to the nature of interests of KUFPEC:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- KUFPEC provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from KUFPEC.
  - Made no changes or inclusions to the EP as a result of consultation with KUFPEC because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.6 OMV Australia / Sapura OMV Upstream

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed OMV advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 30 April 2026, after receiving email bounce-backs from OMV on consultation emails for two Woodside EPs including this one, Woodside sent a follow-up email to a different email address (SI Report A, reference 18.1). Woodside provided a copy of the Consultation Information Sheet for this EP and advised OMV it had extended the consultation period for OMV until 30 May 2026.
- On 19 May 2026, OMV responded thanking Woodside for getting in contact (SI Report A, reference 18.2). OMV noted **(1)**.
- On 19 May 2026, Woodside thanked OMV for its response (SI Report A, reference 18.3) and responded to **(1)**.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) OMV advised it would not make a consultation submission for this EP, and recommended contacting Santos as the operator of a title referenced in relation to another Woodside EP.	**(1)** Woodside acknowledges that OMV is not making a submission on this EP. While the title referenced by OMV is not relevant to this EP, Woodside has consulted Santos for this EP.	**(1)** Woodside thanked OMV for confirming it had no objections and advised that Santos had been consulted for this EP.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with OMV for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given OMV sufficient information to allow OMV to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to OMV on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.

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  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 19 May 2026, OMV shared its feedback regarding this activity, indicating the information provided was sufficient to enable OMV to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed OMV a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to OMV advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed OMV 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed OMV a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with OMV is appropriate and adapted to the nature of interests of OMV:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as OMV did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on OMV' functions, interests or activities.

4.7.7 Pathfinder Energy

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Pathfinder Energy advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 14 April 2026, Pathfinder Energy thanked Woodside for its email (SI Report A, reference 19.1). Pathfinder Energy raised **(1)**.
- On 15 April 2026, Woodside thanked Pathfinder Energy for its response (SI Report A, reference 19.2). Woodside responded to **(1)**.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Pathfinder Energy advised it had no comment and did not require consultation.	**(1)** Woodside acknowledges that Pathfinder Energy does not have any comment on the EP and does not require any further consultation on the proposed activity.	**(1)** Woodside thanked Pathfinder Energy for confirming it had no comments.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Pathfinder Energy for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Pathfinder Energy sufficient information to allow Pathfinder Energy to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Pathfinder Energy on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.

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  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).
- On 14 April 2026, Pathfinder Energy shared its feedback, claims or objections regarding this activity, indicating the information provided was sufficient to enable Pathfinder Energy to make an informed assessment of the possible consequences of the activity on its functions, interests or activities.

Reasonable Period

Woodside allowed Pathfinder Energy a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Pathfinder Energy advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Pathfinder Energy 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Pathfinder Energy a reasonable period for consultation in preparation of the EP, as evidenced by its response on 14 April 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Pathfinder Energy is appropriate and adapted to the nature of interests of Pathfinder Energy:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Pathfinder Energy provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Pathfinder Energy.
  - Made no changes or inclusions to the EP as a result of consultation with Pathfinder Energy because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.8 Santos NA Energy Holdings / Santos Ltd / Santos WA Northwest / Santos Offshore / Santos WA Southwest / Santos (BOL) / Santos WA PVG

Summary of information provided and record of consultation for this EP:

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- On 13 April 2026, Woodside emailed Santos advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 1 May 2026, Santos thanked Woodside for the email (SI Report A, reference 20.1) and raised **(1)**.
- On 6 May 2026, Woodside thanked Santos for its response (SI Report A, reference 20.2) and responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Santos advised it had no objections to claims in relation to the activity.	**(1)** Woodside acknowledges that Santos has no objections or claims.	**(1)** Woodside thanked Santos for confirming it had no objections or claims.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Santos for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Santos sufficient information to allow Santos to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Santos on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Santos a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Santos advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Santos 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Santos a reasonable period for consultation in preparation of the EP, as evidenced by its response on 1 May 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Santos is appropriate and adapted to the nature of interests of Santos:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Santos provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Santos.
  - Made no changes or inclusions to the EP as a result of consultation with Santos because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

4.7.9 Vermilion Energy

Summary of information provided and record of consultation for this EP:

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- On 13 April 2026, Woodside emailed Vermilion Energy advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 4 May 2026, Vermilion thanked Woodside for the email (SI Report A, reference 21.1) and raised **(1)**.
- On 6 May 2026, Woodside thanked Vermilion for its email (SI Report A, reference 21.2) and responded to **(1)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Vermilion advised it had no comments on the proposed activity.	**(1)** Woodside acknowledges that Vermilion has no comments.	**(1)** Woodside thanked Vermilion for confirming it had no comments.	**(1)** No additional controls or measures are required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Vermilion Energy for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Vermilion Energy sufficient information to allow Vermilion Energy to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Vermilion Energy on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Vermilion Energy a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Vermilion Energy advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Vermilion Energy 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Vermilion Energy a reasonable period for consultation in preparation of the EP, as evidenced by its response on 4 May 2026.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Vermilion Energy is appropriate and adapted to the nature of interests of Vermilion Energy:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Vermilion Energy provided feedback but no objections or claims. In line with the intended outcome of consultation as set out in Section 5.2 and Regulations 24(b) and 34(g), Woodside has:
  - Responded to feedback from Vermilion Energy.
  - Made no changes or inclusions to the EP as a result of consultation with Vermilion Energy because appropriate measures are already included in the EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.

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4.8 Peak industry representative bodies

4.8.1 Australian Energy Producers (AEP)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AEP advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with AEP for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given AEP sufficient information to allow AEP to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to AEP on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.

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- A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed AEP a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to AEP advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed AEP 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed AEP a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with AEP is appropriate and adapted to the nature of interests of AEP:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding AEP of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as AEP did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on AEP's functions, interests or activities.

4.9 Local government and elected parliamentary representatives, community groups or organisations

4.9.1 Carnarvon Chamber of Commerce and Industry; Exmouth Chamber of Commerce and Industry; Karratha & Districts Chamber of Commerce and Industry; Onslow Chamber of Commerce and Industry (collectively: Chambers of Commerce and Industry)

Summary of information provided and record of consultation for this EP:

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- On 13 April 2026, Woodside emailed the Chambers of Commerce and Industry advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with the Chambers of Commerce and Industry for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Chambers of Commerce and Industry sufficient information to allow Chambers of Commerce and Industry to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Chambers of Commerce and Industry on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Chambers of Commerce and Industry a reasonable period for consultation in the preparation of the EP because:

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- A consultation period was stated in the initial correspondence to Chambers of Commerce and Industry advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Chambers of Commerce and Industry 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Chambers of Commerce and Industry a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Chambers of Commerce and Industry is appropriate and adapted to the nature of interests of Chambers of Commerce and Industry:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Chambers of Commerce and Industry of the opportunity to provide feedback.
- Woodside hosted CLG meetings in Exmouth and Karratha which were attended by representatives of Exmouth CCI and Karratha & Districts CCI, offering another opportunity for those chambers to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Chambers of Commerce and Industry did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Chambers of Commerce and Industry's functions, interests or activities.

4.9.2 Exmouth Community Liaison Group (Exmouth CLG)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Exmouth CLG advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 7 May 2026, Woodside presented to the Exmouth CLG on a number of Woodside activities including EP consultation (SI Report A, reference 22.1).

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- Woodside presented slides on how it consults relevant persons in the course of preparing EPs and provided an overview of this EP. The slides included a QR code and a URL for the Consultation Activities page of the Woodside website.
- 8 CLG members attended the meeting representing:
  - Shire of Exmouth (3)
  - Gascoyne Development Commission (1)
  - Exmouth Chamber of Commerce and Industry (1)
  - Exmouth Volunteer Marine and Rescue (1)
  - Exmouth Freight and Logistics (1)
  - Terrafirma Offshore (1)
- No feedback was provided for this EP.

- On 3 June 2026, slides from the 7 May 2026 meeting were distributed to all members of the CLG.

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Exmouth CLG for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Exmouth CLG sufficient information to allow Exmouth CLG to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Exmouth CLG on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.

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- A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
- A timeframe for consultation and the provision of feedback.
- A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
- Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Exmouth CLG a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Exmouth CLG advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Exmouth CLG 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Exmouth CLG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Exmouth CLG is appropriate and adapted to the nature of interests of Exmouth CLG:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Exmouth CLG of the opportunity to provide feedback.
- On 7 May 2026, Woodside hosted an Exmouth CLG meeting during which this EP was discussed, offering another opportunity for members to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Exmouth CLG did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Exmouth CLG's functions, interests or activities.

4.9.3 Karratha Community Liaison Group (Karratha CLG)

Summary of information provided and record of consultation for this EP:

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- On 1 April 2026, Woodside presented to the Karratha CLG on EP consultation requirements and Woodside activities, including activities for this EP (SI Report A, reference 23.1).
  - Woodside presented slides on how it consults relevant persons in the course of preparing EPs and advised consultation was coming up for this EP. The slides included a QR code and a URL for the Consultation Activities page of the Woodside website.
  - 5 CLG members attended the meeting representing:
    - Department of Education
    - Dampier Community Association
    - Karratha Central Healthcare
    - Karratha and Districts Chamber of Commerce and Industry
    - Bechtel
  - No feedback was provided for this EP.
- On 13 April 2026, Woodside emailed Karratha CLG advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Karratha CLG for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Karratha CLG sufficient information to allow Karratha CLG to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

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- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Karratha CLG on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Karratha CLG a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Karratha CLG advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Karratha CLG 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Karratha CLG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Karratha CLG is appropriate and adapted to the nature of interests of Karratha CLG:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- On 1 April 2026, Woodside hosted a Karratha CLG meeting during which this EP was discussed, offering another opportunity for members to provide feedback.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Karratha CLG of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Karratha CLG did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Karratha CLG's functions, interests or activities.

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4.9.4 City of Karratha

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed City of Karratha advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with City of Karratha for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given City of Karratha sufficient information to allow City of Karratha to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to City of Karratha on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.

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– Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed City of Karratha a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to City of Karratha advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed City of Karratha 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed City of Karratha a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with City of Karratha is appropriate and adapted to the nature of interests of City of Karratha:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding City of Karratha of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as City of Karratha did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on City of Karratha's functions, interests or activities.

4.9.5 Shire of Ashburton

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Shire of Ashburton advising of the proposed activity (Record of Consultation, reference 6.1.21), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Shire of Ashburton for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Shire of Ashburton sufficient information to allow Shire of Ashburton to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Shire of Ashburton on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Shire of Ashburton a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Shire of Ashburton advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Shire of Ashburton 30 days for consultation.

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- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Shire of Ashburton a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Shire of Ashburton is appropriate and adapted to the nature of interests of Shire of Ashburton:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Shire of Ashburton of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Shire of Ashburton did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Shire of Ashburton's functions, interests or activities.

4.9.6 Shire of Carnarvon

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Shire of Carnarvon advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate,	No additional measures or controls are required.

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		Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Shire of Carnarvon for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Shire of Carnarvon sufficient information to allow Shire of Carnarvon to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Shire of Carnarvon on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Shire of Carnarvon a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Shire of Carnarvon advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Shire of Carnarvon 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Shire of Carnarvon a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Shire of Carnarvon is appropriate and adapted to the nature of interests of Shire of Carnarvon:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Shire of Carnarvon of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Shire of Carnarvon did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Shire of Carnarvon's functions, interests or activities.

4.9.7 Shire of Exmouth

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Shire of Exmouth advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Shire of Exmouth for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

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Sufficient Information

Woodside has given Shire of Exmouth sufficient information to allow Shire of Exmouth to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Shire of Exmouth on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'.*
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Shire of Exmouth a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Shire of Exmouth advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Shire of Exmouth 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Shire of Exmouth a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Shire of Exmouth is appropriate and adapted to the nature of interests of Shire of Exmouth:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Shire of Exmouth of the opportunity to provide feedback.
- On 7 May 2026, Woodside hosted an Exmouth CLG meeting which was attended by representatives of the Shire of Exmouth, offering another opportunity for Shire of Exmouth to provide feedback on this EP.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Shire of Exmouth did not provide feedback for this EP.

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- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Shire of Exmouth's functions, interests or activities.

4.10 Other non-government groups or organisations (NGOs) or individuals

4.10.1 The Wilderness Society

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed TWS advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 8 May 2026, TWS emailed to thank Woodside for contacting it (SI Report A, reference 24.1). TWS raised **(1)** and **(2)**.
- On 19 May 2026, Woodside thanked TWS for the email (SI Report A, reference 24.2). Woodside responded to **(1)** and **(2)**.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) TWS set out reasons why it considered itself a relevant person but advised it would not provide feedback on the activity at this time.	**(1)** Woodside notes that TWS will not provide feedback at this time.	**(1)** Woodside acknowledged TWS's advice that it would not provide feedback at this time.	**(1)** No changes or additional measures required. Woodside's assessment of relevancy is set out in Appendix F, Table 1.
(2) TWS asked to be kept updated as the activity progressed as it may provide feedback in the future, and provided its preferred email address.	**(2)** Woodside will notify TWS of significant changes to the proposed activity, and will continue to review, assess and respond to relevant claims and objections about the adverse impact of the activity throughout the life of the EP.	**(2)** Woodside advised it would keep TWS informed of significant changes to the proposed activity, and that it continued to assess relevant feedback throughout the life of the EP, applying its Management of Change and Revision Process as appropriate.	**(2)** No changes or additional measures required.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional controls or measures are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with TWS for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given TWS sufficient information to allow TWS to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to TWS on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed TWS a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to TWS advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed TWS 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed TWS a reasonable period for consultation in preparation of the EP, as evidenced by TWS's response on 8 May 2026.

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Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with TWS is appropriate and adapted to the nature of interests of TWS:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Between May and August 2026, Woodside held information stalls at community events in the Pilbara region to raise awareness of the EP and provide additional opportunities for feedback. These events were promoted in local newspapers and on social media.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding TWS of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as TWS did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on TWS's functions, interests or activities.

4.10.2 Telstra

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Telstra advising of the proposed activity (Record of Consultation, reference 6.1.10), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*. Woodside also provided a map of communication cables in relation to the activity (Record of Consultation, reference 6.1.6).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).
- On 7 May 2026, Telstra responded to the consultation email for this EP (SI Report A, reference 25.1) asking for an additional Telstra contact to be added to Woodside's mailing list, and if there was a direct Woodside contact.
- On 12 May 2026, Woodside telephoned Telstra to provide general information on Woodside's consultation process (SI Report A, reference 25.2).
- On 13 May 2026, Woodside responded to Telstra in relation to this EP (SI Report A, reference 25.3). Woodside acknowledged that Telstra was already liaising with Woodside on general consultation processes and other EPs, and advised the best contact if Telstra had specific feedback on this EP. No response to this email was received.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Submarine communications infrastructure in proximity to the Operational Area is set out in Section 4.10.6 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Telstra for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Telstra sufficient information to allow Telstra to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Telstra on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Telstra a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Telstra advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Telstra 30 days for consultation.

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- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Telstra a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Telstra is appropriate and adapted to the nature of interests of Telstra:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Telstra of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Telstra did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Telstra's functions, interests or activities.

4.11 Research institutes and local conservation groups or organisations

4.11.1 Cape Conservation Group (CCG)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed CCG advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with CCG for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given CCG sufficient information to allow CCG to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to CCG on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed CCG a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to CCG advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed CCG 30 days for consultation.

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- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed CCG a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with CCG is appropriate and adapted to the nature of interests of CCG:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding CCG of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as CCG did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on CCG's functions, interests or activities.

4.11.2 Protect Ningaloo

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Protect Ningaloo advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate,	No additional measures or controls are required.

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		Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environment Regulations and considers consultation with Protect Ningaloo for the purpose of regulation 25 complete. Sufficient information, a reasonable period and a reasonable opportunity have been provided, as described in Section 5.4 of the EP and further summarised in the Consultation Approach above. Specifically:

Sufficient Information

Woodside has given Protect Ningaloo sufficient information to allow Protect Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests or activities because:

- The Consultation Information Sheet for this EP has been publicly available on the Woodside website since April 2026. Woodside gave this information to Protect Ningaloo on 13 April 2026, marking the commencement of consultation on this EP. The Consultation Information Sheet included:
  - The purpose of consultation and set out what was being sought through consultation.
  - A summary of the activity description, location of the activity, timing of the activity, receiving environment, impacts and risks associated with the Petroleum Activities Program, and proposed mitigation and management measures.
  - A timeframe for consultation and the provision of feedback.
  - A link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community'*.
  - Advice that relevant persons can request that particular information provided during consultation not be published (to align with 25(4) of the Environment Regulations).

Reasonable Period

Woodside allowed Protect Ningaloo a reasonable period for consultation in the preparation of the EP because:

- A consultation period was stated in the initial correspondence to Protect Ningaloo advising of consultation as well as when consultation closed for the purposes of the preparation of the EP. This enabled Woodside to assess feedback before EP submission.
- Woodside's methodology allows a 30-day consultation period and Woodside allowed Protect Ningaloo 30 days for consultation.
- Consultation for this EP commenced 3 months ago.
- In this context, Woodside allowed Protect Ningaloo a reasonable period for consultation in preparation of the EP.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided because Woodside's approach to consultation with Protect Ningaloo is appropriate and adapted to the nature of interests of Protect Ningaloo:

- Woodside published advertisements in 6 national, state, and relevant local newspapers (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.
- Woodside ran a targeted social media campaign (see Consultation Activities). This allowed for broad awareness of the activity under the EP and also of consultation.

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- Woodside also consulted Protect Ningaloo's parent organisation, AMCS, for this EP, providing Protect Ningaloo with an additional avenue for providing feedback.
- In the absence of feedback, Woodside sent a follow-up consultation email on 4 May 2026, reminding Protect Ningaloo of the opportunity to provide feedback.

Outcomes of Consultation

Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24. The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No additional measures were considered as a result of consultation as Protect Ningaloo did not provide feedback for this EP.
- Woodside will continue to accept and assess feedback throughout the life of the EP and apply its Management of Change and Revision process when applicable.
- The measures and controls described in this EP address the potential impact from the proposed activity on Protect Ningaloo's functions, interests or activities.

4.12 Traditional custodians and nominated representative corporations

4.12.1 Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

BTAC is established under the *Native Title Act 1993* (Cth) by the Thalanyji people to represent the Thalanyji people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Through conversations with BTAC outside of EP consultation, Woodside was advised of additional contacts within BTAC to forward EP information. Woodside forwarded this information to these contacts. This context and process demonstrates that Woodside's consultation approach with BTAC is appropriate and adapted to the nature and interests of BTAC.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed BTAC advising of the proposed activity (Record of Consultation, reference 6.1.28). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.

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- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.
- Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 14 April 2026, Woodside forwarded BTAC the record of consultation email to further contacts within BTAC. Woodside also shared an overview of the upcoming EPs (SI Report B, reference 1.1.1).
- On 30 April 2026, Woodside emailed BTAC a reminder about the proposed activity (SI Report B, reference 1.1.2). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value Sea Country – connection to, access to and transfer of knowledge: • Enduring deep connection north of Onslow, extending out to Islands off the Pilbara coast including the Montebello, Barrow and Mackerel Islands. • Cultural obligation to care for environment and values of Sea Country.	**(1)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.28). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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• Resources including fish, shellfish, crabs, crustaceans, sea urchins, eggs, turtles, dugongs, flora and fauna associated with mangrove communities. • Artefacts and burials in coastal sand dunes. • Archaeological sites on Barrow and Montebello Islands. • Archaeological evidence of use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins. • Ceremonial sites (Thalu) for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.			
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient Information** Sufficient information has been provided because: • On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website. • Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:			

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  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than 3 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in consultation for other activities or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

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Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.2 Kariyarra Aboriginal Corporation (KAC)

Kariyarra is established under the *Native Title Act 1993* (Cth) by Kariyarra people to represent the Kariyarra people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

At the start of consultation, Woodside provided KAC a table of cultural values previously identified through consultation and reviews of publicly available literature. Woodside invited KAC to make changes or provide additional information about these cultural values. During a consultation meeting for this EP, KAC clarified the wording of a cultural value. Woodside has updated its records to reflect this. This context and engagement in this process demonstrates that Woodside's consultation approach with KAC is appropriate and adapted to the nature and interests of KAC.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed KAC advising of the proposed activity (Record of Consultation, reference 6.1.29). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1,2,3,4,5,6,7,8,9)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1,2,3,4,5,6,7,8,9)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
  - Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 13 April 2026, KAC emailed Woodside to ask whether Woodside would like to consult on this EP (SI Report B, reference 1.2.1).

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- On 14 April 2026, Woodside replied to KAC noting the consultation dates for this and another EP. Woodside also welcomed the opportunity to meet to consult (SI Report B, reference 1.2.2).
- Between the 13 April 2026 and 7 May 2026, KAC and Woodside emailed to discuss meeting details, the consultation meeting quote and KAC's Meeting policy for the upcoming consultation meeting for this and another EP (SI Report B, Reference 1.2.3 - 1.2.16).
- On 8 May 2026, Woodside met with KAC to discuss this and another EP (SI Report B, reference 1.2.17). Relevant matters include:
  - Overview of the EP consultation process was discussed.
  - Woodside provided an activity overview of this and another EP including details of planned and unplanned activities.
  - **(10,11,12,13)** The group raised the following feedback for consideration within the EP.
  - **(10,11,12,13)** Woodside responded to and addressed feedback from the group.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural Value Marine Animals: • Management of sea turtle nesting. • Impacts to whale migration (whales are connected to Songlines). • Shellfish. • Cockles. • Oysters. • Clam shells. • Concha Shells (Nanku). • Mullets (fish). • Sea cow (dugong).	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). During consultation for this EP, KAC clarified the wording for Concha Shells (Nanku) during the consultation meeting. Woodside updated its records to reflect this.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural Value Sea Country:	**(2)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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• Cultural obligations to care for Country. • Secret habitat totems. • Access required for fishing, trapping, crabbing, catching turtle, hunting dugong, using stingray barbs for spears, collecting shellfish and visiting offshore islands at low tide.		invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural Value Yinta: • Significant cultural/spiritual sites often a water source but possibly other features such as hills. • Cultural rights to land to determine who can use or speak for an area.	**(3)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural Value Marine species as resources: • Marine mammals. • Fish. • Molluscs including bivalves, gastropods and cephalopods. • Shellfish, cockles, oysters, clam shells, concha shells (Nanku).	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(5) Cultural Value • Potential impacts on coastal landforms and vegetation.	**(5)** This value has been identified through Woodside's data collection processes (consultation).	**(5)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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		Consultation, 6.1.29). No changes were requested.	
(6) Cultural Value Heritage sites associated with the coast and ocean including the presence of mythical snakes: • Traditional knowledge recalls that a saltwater serpent lives in the sea and brings fish to shore.	**(6)** This value has been identified through Woodside's data collection processes (consultation and reviews of publicly available literature).	**(6)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	**(6)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(7) Cultural Value Transfer of knowledge to future generations: • Impacts of species reduction. • Temporary exclusion to areas in the case of an oil spill etc.	**(7)** This value has been identified through Woodside's data collection processes (consultation).	**(7)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	**(7)** Knowledge of cultural values and heritage is presented in Section 4.9 of the EP. Impacts and risks to Indigenous cultural features and heritage values are assessed in Section 6.11 of the EP. Procedures related to an unplanned hydrocarbon release are identified in Appendix G - Oil Spill Preparedness and Response Mitigation Assessment and Appendix H – Oil Pollution First Strike Plan.
(8) Cultural value • Islands off the coast of Port Hedland are extremely important to KAC (Little Turtle, North Turtle and Bedout).	**(8)** This value has been identified through Woodside's data collection processes (consultation).	**(8)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	**(8)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(9) Cultural Value	**(9)**	**(9)** At the beginning of consultation for this EP, Woodside provided a list of the	**(9)** Woodside has updated Section 4.9 to record these interests and cultural

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• Importance of river systems as food chains.	This value has been identified through Woodside's data collection processes (consultation).	cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.29). No changes were requested.	values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(10) KAC noted that engagement on EPs should not be limited to meeting with the CEO; Directors should also be engaged.	**(10)** Woodside acknowledges KAC's preference for consultation to involve Directors.	**(10)** Woodside considers that its consultation approach provides an opportunity for consultation information to be shared with KAC Directors, the Board, Elders, office holders and other interested parties as outlined in the Record of Consultation.	**(10)** No action required.
(11) KAC asked how common small, unplanned spills are and what is the threshold for action.	**(11)** Woodside takes a robust and systematic approach to environmental management of petroleum activities.	**(11)** Woodside explained that small, unplanned spills are more likely to occur compared with larger well blowouts or vessel collisions. These spills of chemicals and hydrocarbons are typically small volumes and are required to be submitted to NOPSEMA through monthly incident reporting regardless of volume.	**(11)** Risks arising from unplanned spills are assessed in Section 6.8 and 6.9 of the EP. As well as in Appendix H – Oil Pollution First Strike Plan.
(12) KAC asked what a planned discharge look like (e.g., sewage) and what are the actual levels?	**(12)** Woodside has controls in place to manage planned discharges in accordance with its regulatory obligations.	**(12)** Woodside explained that discharge levels vary due to personnel numbers onboard and operational activity and are managed to be as low as reasonably practicable (ALARP).	**(12)** Planned discharges are described and assessed in Section 6.7 of the EP.
(13) KAC asked if vessels/platforms have weather tracking systems.	**(13)** Weather conditions can influence offshore operations and emergency response activities. Woodside considers that the use of weather forecasting and monitoring information forms part of	**(13)** Woodside noted that vessels/platforms typically have oil spill tracker buoys onboard that can be activated/deployed	**(13)** No action required.

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	standard operational and risk management processes for offshore activities.	to move with waves and provide raw swell movement data.	
While feedback has been received, there were no objections or claims.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	Based on the engagement to date, no additional measures or controls required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

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A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than 3 months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions and met to discuss the proposed activity.
- Throughout the consultation period, Woodside has had direct contact lines during the consultation period. This included multiple emails, phone calls and meetings.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Feedback was provided during consultation for this EP relating to cultural values, in addition to cultural values obtained throughout consultation for other activities or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, the group provided feedback but no objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.3 Malgana Aboriginal Corporation (Malgana)

Malgana is established under the *Native Title Act 1993* (Cth) by the Malgana people to represent the Malgana people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Malgana advising of the proposed activity (Record of Consultation, reference 6.1.30). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.

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- An overview of the proposed activity.
- Links to the NOPSEMA Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information and contact details.
- **(1,2,3,4,5)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
- **(1,2,3,4,5)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
- A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.

- On 30 April 2026, Woodside emailed Malgana a reminder about the proposed activity (SI Report B, reference 1.3.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value Interest in Shark Bay: • Unique environment. • Stromatolites and microbial mats. • Seagrass.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.30). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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(2) Cultural value Access to Country for resources: • Bird and turtle eggs. • Dugongs. • Turtle. • Fish including sharks. • Shellfish. • Crabs.	**(2)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.30). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural value • Traditional knowledge of freshwater seeps in the submerged landscape.	**(3)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.30). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value Cultural significant species: • Green sea turtles. • Dugongs. • Shags. • Bottlenose dolphins.	**(4)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.30). No changes were requested.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(5) Cultural value Knowledge: • Sharing and controlling of knowledge – knowledge owners must maintain control.	**(5)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(5)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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• Transfer of knowledge to younger generations – older people pass on knowledge about Country to younger people.		Consultation, 6.1.30). No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

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Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, however information relating to the group's cultural values has been obtained during consultation for other activities or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.4 Murujuga Aboriginal Corporation (MAC)

MAC is established under the Burrup and Maitland Industrial Estates Agreement and is the representative body for the Traditional Custodians for Murujuga being the Ngarluma, the Mardudhunera, the Yaburara, the Yindjibarndi, and the Wong-Goo-Tt-Oo peoples (collectively Ngarda-Ngarli). MAC is the cultural authority for Murujuga and is responsible for the management and protection of its cultural values.

At the start of consultation, Woodside provided MAC a table of cultural values previously identified for MAC through consultation and reviews of publicly available literature. Woodside invited MAC to make changes or provide additional information about these cultural values. During consultation for this EP, MAC wrote to Woodside to provide feedback on this EP and provide additional context on the cultural values shared by Woodside. Woodside has updated the

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EP to reflect this, and if relevant, potential impacts assessed and controls applied. This context and process demonstrates that Woodside's consultation approach with MAC is appropriate and adapted to the nature and interests of MAC.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed MAC advising of the proposed activity (Record of Consultation, reference 6.1.31). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1,2,3,4,5,6,7,8)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1,2,3,4,5,6,7,8)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed MAC a reminder about the proposed activity (SI Report B, reference 1.4.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 12 May 2026, MAC emailed Woodside a letter relating to this and another EP (SI Report B, reference 1.4.2). Relevant items include:
  - **(9,10,11,12,13)** The group raised the following feedback for consideration within the EP.
- On 15 June 2026, Woodside emailed MAC to address feedback from the letter dated 12 May 2026 (SI Report B, reference 1.4.3). Relevant items include:
  - **(9,10,11,12,13)** Woodside responded to and addressed feedback from the group.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value • The ecosystem and health of Mermaid Sound.	**(1)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value Marine species: • Whales – totemic importance. • Dolphins – cultural ceremonies. • Dugongs – food source. • Fish – cultural ceremonies. • Sea snakes – culturally important. • Turtles – Songlines. • Coral – attract fish and other species. • Seagrass – provide protection for animals. Locations include Conzinc Island and between Angel and Gidley Islands. • Stingrays. • Sharks. • Crustaceans. • Octopus.	**(2)** This value has been identified through Woodside's data collection processes (consultation and publicly available literature).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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• Sea stars. • Sea urchins. • Sponges. • Molluscs			
(3) Cultural value Marine eco-systems: • Mangroves: would have provided shelter, crabbing, digging for shellfish and could be turtle nurseries. Locations include Conzinc Bay north end, Flying Foam Passage, Searipple Passage, North-East Bay of West Lewis Island. • Macroalgal (seaweed) communities: important habitats and food sources. • Subtidal soft bottom communities (ocean bottom): support invertebrate diversity. • Intertidal sand and mudflat communities: support invertebrate diversity and provide food for shorebirds. • Rocky shores: habitats for plants/animals and provide food for shorebirds.	**(3)** This value has been identified through Woodside's data collection processes (consultation and publicly available literature).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value • Fish traps in Conzinc Bay and Angel and Gidley Islands.	**(4)** This value has been identified through Woodside's data collection processes (consultation and publicly available literature).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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		additional information (See Record of Consultation, 6.1.31) No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(5) Cultural value • Harvesting squid around Conzinc Bay.	**(5)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(5)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(6) MAC is the appropriate cultural authority for Murujuga.	**(6)** This value has been identified through Woodside's data collection processes (consultation).	**(6)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(6)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(7) Cultural value Submerged landscape: • Potential impact on Jinna (Songlines). • Potential impact to Aboriginal heritage due to the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	**(7)** This value has been identified through Woodside's data collection processes (consultation).	**(7)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(7)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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(8) Cultural value Murujuga seasonal calendar: • Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	**(8)** This value has been identified through Woodside's data collection processes (consultation).	**(8)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.31). No changes were requested.	**(8)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(9) MAC advised that the cultural values attachment does not appear to be a comprehensive assessment of values and the attachment remains limited. MAC requested that Woodside clearly identify within the EPs what efforts have gone into identify cultural values that may be impacted by their proposed works and how these have been incorporated into specific management actions.	**(9)** Woodside notes that the cultural values attachment is not intended to be a comprehensive assessment of cultural values and welcomes groups to provide additional information. Cultural information provided through consultation, together with desktop studies, is considered in the assessment of impacts and development of management measures, where relevant to the activity. The potential risks and impacts associated with the proposed activities are described in the Consultation Information Sheet. A link to this document was provided to MAC via Woodside's initial consultation email for the EPs dated 13 April 2026.	**(9)** Woodside responded to MAC and noted that Attachment A reflects information previously shared by MAC, as well as information stated as explicitly relevant to MAC sourced through reviews of publicly available literature. The attachment is not intended to represent a comprehensive or final assessment of cultural values. Woodside advised the purpose of EP consultation is to understand how the proposed activities in the EPs could potentially impact cultural values, functions, interests, and activities. This allows Woodside, in the course of developing the EPs, to assess feedback, and where relevant to the activity, consider appropriate control measures to include in the EPs.	**(9)** Cultural values identified through consultation and desktop studies, and the assessment of potential impacts and controls, are described in Sections 4.9 of the EP.
(10) MAC advised that any development that could potentially affect the natural movement, migration and/or other behaviour of marine species may have an impact on the cultural interpretation of the seasonal landscape and seascape and associated cultural behaviours. MAC also advised	**(10)** This value has already been identified through Woodside's data collection processes (consultation). However, the added contextual information provided by MAC will be considered alongside the current assessment of information where relevant.	**(10)** Woodside advised that this information is already recorded Attachment A. Woodside noted that updated contextual information will be included so it is considered alongside the current assessment of information where relevant. Woodside invite MAC to continue to identify the potential impacts	**(10)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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that any impact to the ocean floor should be considered in terms of its potential impact to submerged landscapes and the preservation of earliest human occupation of the region.		to cultural heritage and cultural values by the proposed activities under consideration in EPs through ongoing consultation and engagement with Woodside. Woodside will continue to provide the cultural values document in future EP consultation with MAC to support ongoing review and accuracy.	
(11) MAC advised that whilst the protection of environmental values is a significant aspect of protecting cultural values, the nature and threshold of impact must be assessed separately.	**(11)** Woodside undertakes assessments for both environmental and cultural values. These are considered individually and collaboratively.	**(11)** Woodside advised potential impacts to cultural heritage and cultural values are considered through Woodside's established cultural heritage management and consultation processes, which recognise that cultural values are not always fully captured through environmental or scientific assessment alone. Consultation seeks to understand the cultural, social and spiritual significance of places, species and seasonal indicators, and how changes to environmental conditions may have associated potential cultural impacts. Information provided through consultation informs the identification of potential cultural heritage impacts and if relevant, supports the consideration and where appropriate the adoption of management and mitigation measures, in addition to broader environmental controls. Where group-specific cultural information is shared, this is considered alongside environmental risk assessment to support culturally informed decision-making and ongoing management.	**(11)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(12)	**(12)**	**(12)**	**(12)**

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MAC requested that Woodside notify MAC in advance of any extended or non-routine offshore operations in the vicinity of the Dampier Archipelago, including unplanned extensions to activities in this area.	Woodside acknowledges MAC's request regarding notification of extended or non-routine offshore operational activities in the vicinity of the Dampier Archipelago relevant to MAC's air quality monitoring programs. Woodside is supportive of the Murujuga Rock Art Monitoring Program (MRAMP) where the main focus is on sources in and around the Murujuga airshed, which in terms of Woodside activities include the Karratha Gas Plant (KGP) and Pluto LNG Plant. Activities covered by this EP are not anticipated to influence MAC's monitoring programs and relevant notification arrangements are managed through separate approval processes where applicable.	Woodside advised MAC that offshore operational activities undertaken in Commonwealth Waters are relevant to direct emissions which occur from the facility or associated vessels. Direct emissions from the proposed activities identified in the EP, even in the event of extended or non-routine activities, are not anticipated to influence monitoring results, data interpretation, and reporting for MRAMP. The associated onshore emissions which are relevant to the scope of MRAMP occur at KGP, as a result of processing gas produced and transported onshore from Goodwyn Alpha Facility (and other offshore facilities). Woodside confirmed notifications to MAC in the context of onshore activities and associated emissions are more appropriately managed by the primary and secondary approvals for KGP, including but not limited to various onshore management plans (such as the Air Quality of Cultural Heritage Management Plan) required under Ministerial Statement 1233 for ongoing operations at KGP.	No action required.
(13) MAC advised that in the event of an environmental incident whereby Murujuga falls within the possible impact zone, MAC must be contacted for comment and a review of management actions.	**(13)** Woodside has incident response and notification procedures in place, consistent with regulatory requirements, that include notification of relevant cultural authorities in the event of an environmental incident. Should an incident occur over Murujuga Sea Country, MAC would be contacted as part of this process.	**(13)** Woodside advised that should an incident occur over Murujuga Sea Country, MAC would be contacted.	**(13)** Refer to Section 6.11 of the EP (Indigenous Cultural Features and Heritage Values), including MC 10.5.1 relating to consultation and notification following relevant environmental incidents in line with Appendix H – Oil Pollution First Strike Plan.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	Based on the engagement to date, no additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.

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- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Additional contextual information was provided during consultation for this EP relating to cultural values, in addition to cultural values obtained throughout consultation for other activities and publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, the group provided feedback but no objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.5 Nanda Aboriginal Corporation (Nanda)

Nanda is established under the *Native Title Act 1993* (Cth) by the Nanda people to represent the Nanda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

At the start of consultation, Woodside provided Nanda a table of cultural values previously identified through consultation and reviews of publicly available literature. Woodside invited Nanda to make changes or provide additional information about these cultural values. During consultation for this EP, Nanda emailed Woodside to provide additional cultural values. Woodside has updated the EP to reflect this, with potential impacts assessed and relevant controls applied. This context and process demonstrates that Woodside's consultation approach with Nanda is appropriate and adapted to the nature and interests of Nanda.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Nanda advising of the proposed activity (Record of Consultation, reference 6.1.32). The email included:
  - A Summary Information Sheet.

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- A link to the Consultation Information Sheet.
- An overview of the proposed activity.
- Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
- **(1,2,3,4,5)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
- **(1,2,3,4,5)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
- A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.

- On 30 April 2026, Woodside emailed Nanda a reminder about the proposed activity (SI Report B, reference 1.5.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 14 May 2026, Nanda emailed Woodside a letter relating to this and another EP (SI Report B, reference 1.5.2). Relevant items include:
  - **(6,7,8,9,10)** The group raised the following feedback for consideration within the EP.
- On 18 May 2026, Nanda resent the same email dated 14 May 2026 (SI Report B, reference 1.5.3).
- On 15 June 2026, Woodside emailed Nanda to address feedback from the email dated 14 May 2026 (SI Report B, reference 1.5.4). Relevant items include:
  - **(6,7,8,9,10)** Woodside responded to and addressed feedback from the group.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan

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(1) Cultural value Connection to Country: • Kalbarri Coastal Cliffs: Dreamtime, mythological/creation stories. • Archaeological sites. • Red sandstone outcrops. • Fresh water springs. • Artefacts abundant on islands adjacent to the state marine park.	**(1)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.32). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value • Shorelines are culturally significant.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.32). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural value • Whales – migration patterns.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.32). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value Abrolhos Islands and North Island: • Artefacts. • Historical significance.	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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		additional information (See Record of Consultation, 6.1.32) No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(5) Cultural value White snow crabs: • Food sources.	**(5)** This value has been identified through Woodside's data collection processes (consultation).	**(5)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.32). No changes were requested.	**(5)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(6) Cultural value • Coastlines - Nanda has a rich cultural heritage landscape that spans the entire coastline as can be seen by all the registered sites that are currently recorded on the Aboriginal Cultural Heritage Inquiry System (ACHIS).	**(6)** Woodside acknowledges the cultural significance of coastlines and the broader cultural heritage landscape extending across the Nanda coastline. The information provided is relevant to understanding Nanda's cultural values and has been incorporated into Woodside's assessment of potential impacts on cultural values, where relevant to the Petroleum Activity.	**(6)** Woodside replied to Nanda's email and thanked Nanda for providing this information and updated its record of Nanda cultural values. Woodside assessed whether the proposed activity presents an impact pathway to these values and noted that no shoreline accumulation is predicted from the activity. Woodside invited Nanda to continue providing information regarding cultural heritage values through ongoing consultation.	**(6)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(7) Cultural value • Heritage Sites (known and unknown) including artefact scatters, burials as well as ethnographic sites related to the Nanda dreaming story (most notably Bula Guda and Nungingay Spring).	**(7)** Woodside acknowledges the significance of known and potential Aboriginal heritage places and ethnographic values to the Nanda People. The information provided by Nanda supplements existing information available to Woodside and has been incorporated into Woodside's assessment of potential impacts on	**(7)** Woodside advised that it conducts ACHIS searches to identify known registered and lodged heritage sites that may overlap with an EP area and recognises that ACHIS records are not exhaustive. Woodside updated its record of Nanda cultural values and invited Nanda to continue identifying cultural heritage values and potential impacts through ongoing consultation.	**(7)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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	cultural values, where relevant to the Petroleum Activity.		
(8) Cultural value • Presence of submerged cultural landscapes - The sea shelf along this shoreline is very shallow, from 10m up to 125m, so there is a strong possibility that submerged cultural heritage may be present, as has been exemplified by the Murujuga site complex further north.	**(8)** Woodside acknowledges the cultural significance of the potential presence of submerged cultural heritage and submerged cultural landscapes within the region. The information is relevant to Woodside's consideration of underwater cultural heritage and has been considered in the assessment of potential impacts associated with planned seabed disturbance activities, where relevant.	**(8)** Woodside advised that during the preparation of an EP, it considers available information relating to potential underwater cultural heritage using a risk-based approach. Where seabed disturbance is proposed, Woodside engages qualified maritime archaeologists to undertake underwater cultural heritage assessments, including consideration of submerged cultural landscapes. Assessment outcomes are used to inform management measures to avoid or minimise potential impacts.	**(8)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(9) Nanda requested that Woodside to assist Nanda to carry out comprehensive research on land and sea country to help provide Nanda with assurance that their heritage is properly surveyed and recorded in detail.	**(9)** Woodside notes Nanda's request for further research relating to land and sea country.	**(9)** Woodside advised that it is open to exploring research on land and sea country as part of broader discussions where Woodside activities are relevant to Nanda's footprint.	**(9)** No action required.
(10) Nanda requested these conversations to include discussion around the rehab of sites if they are damaged by Woodside's activities.	**(10)** Woodside notes Nanda's request for discussions regarding rehabilitation of sites if damaged. In the highly unlikely event of a spill, Woodside would notify relevant cultural authorities. There is no expected impact pathway to Nanda's coastline.	**(10)** Woodside also advised that incident response and notification procedures are in place, consistent with regulatory requirements, including notification of relevant cultural authorities where required. Remediation or rehabilitation measures would be determined based on the nature of any incident, regulatory requirements and consultation with relevant persons.	**(10)** No action required. Existing incident response, notification and consultation arrangements are considered adequate.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation. The consultation period extended beyond the 30-day period.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

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- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Feedback was provided during consultation for this EP relating to cultural values, in addition to cultural values obtained throughout consultation for other activities or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, the group provided feedback but no objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.6 Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

NTGAC is established under the *Native Title Act 1993* (Cth) by the Baiyungu people to represent the Baiyungu people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed NTGAC advising of the proposed activity (Record of Consultation, reference 6.1.33). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.

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- **(1)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
- (1) A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
- A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.

- On 30 April 2026, Woodside emailed NTGAC a reminder about the proposed activity (SI Report B, reference 1.6.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value Marine ecosystems and species: • Interest in invasive marine species. • Interest in chemicals released into water – ballast water discharge. • Marine parks – risks. • Whales. • Whale sharks.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.33). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

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- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in for other activities consultation or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.7 Ngarluma Aboriginal Corporation (NAC)

NAC is established under the *Native Title Act 1993* (Cth) by the Ngarluma people to represent the Ngarluma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed NAC advising of the proposed activity (Record of Consultation, reference 6.1.34). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.

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- **(1,2,3)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
- **(1,2,3)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
- A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.
- Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.

- On 30 April 2026, Woodside emailed NAC a reminder about the proposed activity (SI Report B, reference 1.7.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 3 June 2026, NAC, WAC and Wong-Goo-Tt-Oo attended a Quarterly Heritage Meeting in Karratha (SI Report B, reference 5.1). Matters discussed included:
  - Woodside showed a video explaining environmental impact assessments.
  - Woodside noted upcoming EP dates.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value • Onshore Heritage – interest in management of heritage sites.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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		Consultation, 6.1.34). No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value • Potential submerged heritage.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.34). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural value • Manggan (Creative beings) used supernatural force to shape the hills, rivers, seas and landform.	**(3)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.34). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient Information**			

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Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.
- Woodside hosts Heritage Meetings.

Outcomes of Consultation

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The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in consultation for other activities or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.8 Nhuwala Claim Group (Nhuwala)

The Nhuwala Claim Group Native Title claim is in Western Australia's Pilbara region within the Shire of Ashburton. The application area covers around 3,475 square kilometres near the town of Onslow. Nhuwala is represented by YMAC.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Nhuwala (via YMAC) advising of the proposed activity (Record of Consultation, reference 6.1.34). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed Nhuwala (via YMAC) a reminder about the proposed activity (SI Report B, reference 1.8.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.

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– Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.

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- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a “reasonable period” of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside’s approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside’s initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside’s Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.9 Nhuwala / Thalanyji People (Nhuwala / Thalanyji)

The Thalanyji / Nhuwala People Native Title claim is in Western Australia’s Pilbara region within the Shire of Ashburton. The application area consists of multiple parts with a total combined area of around 2,058 square kilometres in an area surrounding Onslow. The Thalanyji / Nhuwala People have legal representation and are associated with BTAC. Woodside has consulted with the Thalanyji / Nhuwala People via BTAC.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Nhuwala / Thalanyji (via BTAC) advising of the proposed activity (Record of Consultation, reference 6.1.36). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.

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- An overview of the proposed activity.
- Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
- A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.

• On 30 April 2026, Woodside emailed Nhuwala / Thalanyji (via BTAC) a reminder about the proposed activity (SI Report B, reference 1.9.1). The email included:

- A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
- A reminder that consultation for the preparation of the EP closes on 12 May 2026.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

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- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

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Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.10 Nyangumarta Warrarn Aboriginal Corporation (NWAC)

NWAC is established under the *Native Title Act 1993* (Cth) by the Nyangumarta people to represent the Nyangumarta people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed NWAC advising of the proposed activity (Record of Consultation, reference 6.1.37). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1,2)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1,2)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed NWAC a reminder about the proposed activity (SI Report B, reference 1.10.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.

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– Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.			
Summary of Feedback, Objection or Claim	**Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity**	**Woodside's Response**	**Inclusion in Environment Plan**
(1) Cultural value • Eighty Mile Beach has cultural and ecological value to the Nyangumarta Custodians.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.37). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11. .
(2) Cultural value Resource Collection: • Impacts to migrating birds, whales, turtles and vegetation.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.37). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.

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- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in consultation for other activities. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.11 Robe River Kuruma Aboriginal Corporation (RRKAC)

RRKAC is established under the *Native Title Act 1993* (Cth) by the Robe River Kuruma people to represent the Robe River Kuruma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed RRKAC advising of the proposed activity (Record of Consultation, reference 6.1.38). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1, 2)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1, 2)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.

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- On 30 April 2026, Woodside emailed RRKAC a reminder about the proposed activity (SI Report B, reference 1.11.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value • Concerns about underwater heritage – impacts at shoreline.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.38). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value • Coastline.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.38). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be	No additional measures or controls are required.

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	relevant have been identified and included based on consultation.	assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.

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- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in consultation for other activities. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.12 Wanparta Aboriginal Corporation (Wanparta)

Wanparta is established under the *Native Title Act 1993* (Cth) by the Ngarla people to represent the Ngarla people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values. Wanparta are represented by a law firm, therefore Woodside consult Wanparta through a legal representative.

At the start of consultation, Woodside provided Wanparta a table of cultural values previously identified through consultation and reviews of publicly available literature. Woodside invited the group to make changes or provide additional information about these cultural values. During consultation for this EP, Wanparta requested a consultation meeting. During this meeting Wanparta shared additional information with Woodside. We understand this new information to also be relevant to the activities described within this EP and have updated the EP to reflect this, with potential impacts assessed and relevant controls applied. This context and process demonstrates that Woodside's consultation approach with Wanparta is appropriate and adapted to the nature and interests of Wanparta.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Wanparta advising of the proposed activity (Record of Consultation, reference 6.1.39). The email included:

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  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1,2,3,4)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1,2,3,4)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed Wanparta a reminder about the proposed activity (SI Report B, reference 1.12.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 8 May 2026, Wanparta (via legal representative) emailed Woodside noting a date to meet and consult on this EP (SI Report B, reference 1.12.2).
- On 11 May 2026, Woodside emailed Wanparta (via legal representative) agreeing to meet on the proposed day to consult on this EP (SI Report B, reference 1.12.3).
- Between 11 May 2026 and 8 June 2026, Woodside and Wanparta (via legal representative) emailed to discuss meeting details, the agenda and the consultation cost (SI Report B, reference 1.12.4 – 1.12.9).
- On 9 June 2026, Wanparta emailed Woodside advising that several directors would not be able to attend in person (SI Report B, reference 1.12.10)
- On 9 June 2026, Woodside met with Wanparta to discuss this and another EP (SI Report B, reference 1.12.11). Relevant matters include:
  - Overview of the EP consultation process was discussed.
  - Woodside provided an activity overview of this and another EP including details of planned and unplanned activities.
  - **(1,5,6,7,8,9,10,11,12,13)** The group raised the following feedback for consideration within the EP
  - **(1,5,6,7,8,9,10,11,12,13)** Woodside responded to and addressed feedback from the group.

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- **(11)** On 10 June 2026 Woodside emailed Wanparta (via legal representative) thanking them for the consultation meeting and provided information pertaining to the National Energy Training Scheme (NETTS) (SI Report B, reference 1.12.12)
- On 15 June 2026, Wanparta (via legal representative) emailed Woodside to thank them for the NETTS information (SI Report B, reference 1.12.13).
- On 1 July 2026, Woodside emailed Wanparta (via legal representative) to confirm if final invoice had been sent through (SI Report B, reference 1.12.14).
- On 2 July 2026, Wanparta emailed Woodside a letter relating to this EP (SI Report B, reference 1.12.15). Relevant items include:
  - **(1,7,9,14)** The group raised the following feedback for consideration within the EP.
- On 3 July 2026, Wanparta emailed Woodside advising final invoice has not been submitted (SI Report B, reference 1.12.16, 1.12.17)
  - Woodside responded acknowledging the email.
- On 6 July 2026, Wanparta (via legal representative) emailed Woodside to confirm if the letter had been received (SI Report B, reference 1.12.18).
- On 7 July 2026, Woodside emailed Wanparta (via legal representative) to confirm the letter had been received (SI Report B, reference 1.12.19).
- On 28 July 2026, Woodside emailed Wanparta (via legal representative) a letter relating to this EP (SI Report B, reference 1.12.20).
  - **(1,7,9,14)** Woodside responded to and addressed feedback from the group.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value Sea Country: • Spiritual connection. • Cultural obligation to look after Sea Country. • A healthy Sea Country leads to healthy marine life and healthy Ngarla People. • Importance of fish stocks. During consultation for this EP, Wanparta raised further cultural values relating to Sea Country:	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.39). On 9 June 2026 and within a follow up letter dated 2 July 2026, Wanparta raised further cultural records relating to Sea Country. Woodside has updated its records.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.

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• Best way to protect Sea Country is through engagement with Ngarla rangers. • Coastline – spiritually and as a way of living. • Ngarla are responsible for caring for now and into the future. • By caring for Ngarla Country, the spirits look after Ngarla people.			
(2) Cultural value Dreamtime stories connected to nearshore islands particularly Solitary Island / Jarrkunpungu: • Dreaming stories through the interconnecting islands. • Dreamtime stories through the nearshore islands. • There is ethnohistorical evidence of Ngarla occupation on these islands.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.39). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural Value: Sea (fresh and salt water): • Dreaming stories. • A responsibility to look after the ocean (law and culture).	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.39). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value Totemic species: • Kestrel.	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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• Octopus. • Spiny brim. • Sting ray.		invited it to make changes or provide additional information (See Record of Consultation, 6.1.39). No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(5) Wanparta asked where grey water goes when on a facility.	**(5)** Grey water is treated onboard the facility and support vessels through approved Sewage Treatment Plants and discharged offshore in accordance with regulatory requirements.	**(5)** Woodside advised during the consultation meeting on 9 June 2026 that grey water is treated onboard the facility and support vessels through approved Sewage Treatment Plants and discharged offshore in accordance with regulatory requirements.	**(5)** Planned discharges are described and assessed in Section 6.7 of the EP.
(6) Wanparta asked what colour the oil is collected by Woodside.	**(6)** Hydrocarbon appearance varies depending on the product type, with condensate generally lighter in colour and heavier crude oils darker in colour.	**(6)** Woodside advised during the consultation meeting on 9 June 2026 that hydrocarbon appearance varies depending on the product type, with condensate generally lighter in colour and heavier crude oils darker in colour.	**(6)** No action required.
(7) Wanparta asked if there was a hydrocarbon release, how is the oil removed and how is disposal of recovered oil on land managed.	**(7)** In the highly unlikely event of an unplanned hydrocarbon release, waste management procedures are identified in Appendix G - Oil Spill Preparedness and Response Mitigation Assessment.	**(7)** Woodside explained during the consultation meeting on 9 June 2026 that in the highly unlikely event of an oil spill, waste would be managed in accordance with Woodside's Oil Spill Response Waste Management Plan and disposed of at appropriately licensed facilities in accordance with regulatory requirements.	**(7)** The EP includes an Oil Spill Response Management Plan Assessment which outlines response strategies and management measures for hydrocarbon releases in Appendix G.
(8) Wanparta asked how rock art and submerged cultural heritage influences how Woodside carries out its activities.	**(8)** Indirect impacts are considered and assessed and managed to acceptable levels which is outlined in the EP. Submerged cultural heritage assessments are also undertaken to understand the location of underwater	**(8)** Woodside advised that indirect impacts (such as emissions) are considered and assessed and managed to acceptable levels. Woodside also supports and participates in ongoing research and maintains regular engagement with	**(8)** Aboriginal cultural heritage values are described in Section 4.9 and potential impacts on these values have been assessed. Where appropriate, management measures are included in

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	features, which informs mitigation strategies where relevant.	Murujuga Aboriginal Corporation to better understand potential impacts and inform management approaches. Submerged cultural heritage assessments are undertaken to understand the location of underwater features, which informs mitigation strategies where relevant.	Sections 6.7, 6.8, 6.9 and 6.11 of the EP.
(9) Wanparta asked how many incidents Woodside has responded to since the last meeting.	**(9)** Unplanned environmental events are investigated in accordance with Woodside's Health, Safety and Environment management system and reported to NOPSEMA in accordance with the EP.	**(9)** Woodside provided information regarding unplanned environmental events that occurred since the previous consultation meeting and advised that environmental incidents are investigated and reported in accordance with Woodside's Health, Safety and Environment management system and regulatory requirements.	**(9)** No action required.
(10) Wanparta asked if Woodside burns off extra gas.	**(10)** Woodside assesses environmental impacts associated with atmospheric emissions, including flaring, and implements appropriate management measures where required.	**(10)** Woodside advised that flaring is used as a safety mechanism to release pressure and prevent gas build-up and may occur during offshore and onshore operations.	**(10)** No action required.
(11) Wanparta asked if their employment or traineeship opportunities available?	**(11)** Woodside notes Wanparta's request for information on training and employment opportunities.	**(11)** Woodside advised that the National Energy Training Scheme (NETTS) intake was open and took an action on notice to providing additional information regarding available opportunities. Woodside provided further information on 10 June 2026.	**(11)** No action required.
(12) Wanparta asked if rangers are involved in oil spill response and planning.	**(12)** In the highly unlikely event of a spill, Woodside would enact its First Strike Plan, which includes contacting the	**(12)** Woodside advised that it recognises the value of ranger participation in shoreline assessment and oil spill response	**(12)** No action required.

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	regulator, NOPSEMA and any relevant cultural authorities that may be affected.	activities and that opportunities for involvement continue to be explored. Woodside also advised that rangers have previously participated in cross-industry oil spill response exercises.	
(13) Wanparta asked if there is potentially an oil spill on Wanparta Country, is Woodside open to completing Cultural Awareness Training before coming on Country.	**(13)** Cultural awareness is incorporated into onboarding and workforce training.	**(13)** During the consultation meeting on 9 June 2026, Woodside explained that cultural awareness is incorporated into onboarding and workforce training. This includes information relevant to working respectfully on Country and recognising Aboriginal cultural values.	**(13)** No action required.
(14) Wanparta requested that Woodside attends at least one Board meeting per calendar year.	**(14)** Woodside appreciates Wanparta's invitation to attend at least one annual Board meeting.	**(14)** Woodside advised that it appreciates Wanparta's invitation to attend at least one annual Board meeting per calendar year and remains open to additional engagement opportunities in the future.	**(14)** No action required.
While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	Based on the engagement to date, no additional measures or controls are required.
Summary Report – Consultation Complete			
Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically: **Sufficient Information** Sufficient information has been provided because: • On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website. • Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:			

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  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation. The consultation period extended beyond the 30-day period.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions and met on 9 June 2026 to discuss the proposed activity.
- Throughout the consultation period, Woodside has had direct contact lines during the consultation period. This included multiple emails, meetings and letters.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- Feedback was provided during consultation for this EP relating to cultural values, in addition to cultural values obtained throughout consultation for other activities. Woodside has incorporated the groups interests and cultural values in Section 4.9.

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- During the past 3 months, the group provided feedback but no objections or claims about the adverse impact of the activity to which this EP relates.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.13 Wirrawandi Aboriginal Corporation (WAC)

WAC is established under the *Native Title Act 1993* (Cth) by the Mardudhunera and Yaburara people to represent the Mardudhunera and Yaburara people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed WAC advising of the proposed activity (Record of Consultation, reference 6.1.41). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1,2,3,4)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
  - **(1,2,3,4)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed WAC a reminder about the proposed activity (SI Report B, reference 1.13.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.

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– Woodside's commitment to managing gender-restricted or other culturally sensitive information.
– Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after.

- On 3 June 2026, NAC, WAC and Wong-Goo-Tt-Oo attended a Quarterly Heritage Meeting in Karratha (SI Report B, reference 5.1). Matters discussed included:
  – Woodside showed a video explaining environmental impact assessments.
  – Woodside noted upcoming EP dates.an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value Marine species: • Whales – migration and potential impact of noise on whale communication. • Turtles – general interest around management and monitoring.	**(1)** This value has been identified through Woodside's data collection processes (consultation).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.41). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value Rock art: • Potential impact of emissions from activities.	**(2)** This value has been identified through Woodside's data collection processes (consultation).	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.41). No changes were requested.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11. .
(3) Cultural value Underwater heritage: • Impacts particularly given recent finding of artefacts.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate

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		additional information (See Record of Consultation, 6.1.41). No changes were requested.	included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value Onshore heritage: • Management of sites.	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.41). No changes were requested.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.

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  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.
- Woodside hosts Heritage Meetings.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in consultation for other activities. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

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4.12.14 Wong-Goo-Tt-Oo

MAC has members from five traditional custodial groups from the Pilbara region of Western Australia. These groups are the Ngarluma, Yaburara, Mardudhunera, Yindjibarndi, and Wong-Goo-Tt-Oo peoples. Wong-Goo-Tt-Oo is part of the Ngarda Ngarli which is the collective term for the five Traditional Owner groups of Murujuga. Wong-Goo-Tt-Oo has requested to be consulted separately from MAC. Wong-Goo-Tt-Oo has been assessed as not relevant to the proposed activity. Woodside chose to contact Wong-Goo-Tt-Oo at its discretion.

Summary of information provided and record of consultation for this EP:

- On 24 April 2026, Woodside emailed Wong-Goo-Tt-Oo advising of the proposed activity (Record of Consultation, reference 6.1.40). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 25 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed Wong-Goo-Tt-Oo a reminder about the proposed activity (SI Report B, reference 1.14.1). The email included:
  - A reference to the original consultation email for this EP sent on 24 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 25 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan

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No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 24 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 24 April 2026 and requested feedback by 25 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.

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- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 24 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

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4.12.15 Yindjibarndi Aboriginal Corporation (Yindjibarndi)

Yindjibarndi is established under the *Native Title Act 1993* (Cth) by the Yindjibarndi people to represent the Yindjibarndi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values. Yindjibarndi has formally notified Woodside that all oil and gas matters relating to Yindjibarndi are to be directed to NYFL, which is Yindjibarndi's Native Title Representative Body.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Yindjibarndi advising of the proposed activity (Record of Consultation, reference 6.1.42). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
  - Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 30 April 2026, Woodside emailed Yindjibarndi a reminder about the proposed activity (SI Report B, reference 1.15.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim	Woodside's Response	Inclusion in Environment Plan

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	about the adverse impact of the activity		
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

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- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.12.16 Yinggarda Aboriginal Corporation (YAC)

YAC is established under the *Native Title Act 1993* (Cth) by the Yinggarda people to represent the Yinggarda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed YAC advising of the proposed activity (Record of Consultation, reference 6.1.43). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - **(1,2,3,4)** Information on the cultural values related to the group that Woodside considers relevant to the activity.

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- **(1,2,3,4)** A request from Woodside that the group confirm if there were any changes or additional information regarding cultural values that Woodside should consider in the preparation for this EP.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
- A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- A request for the group to provide information about the proposed activity to other individuals as required.

- On 30 April 2026, Woodside emailed YAC a reminder about the proposed activity (SI Report B, reference 1.16.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) Cultural value • Right and responsibility to speak and care for Country.	**(1)** This value has been identified through Woodside's data collection processes (publicly available literature).	**(1)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.43). No changes were requested.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value	**(2)** This value has been identified through Woodside's data collection processes	**(2)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential

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Contemporary use of Country for cultural activities: • Fishing including for Shark Bay mullet. • Camping. • Hunting and gathering.	(consultation and publicly available literature).	believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.43). No changes were requested.	impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural value Ecosystem health: • Plants and animals and the environment are inexorably linked to culture. • Seagrass is an important food. source for dugongs.	**(3)** This value has been identified through Woodside's data collection processes (consultation).	**(3)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.43). No changes were requested.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value Marine mammals: • Dugongs. • Whales (potential impact to migration patterns and potential collisions with vessels).	**(4)** This value has been identified through Woodside's data collection processes (consultation).	**(4)** At the beginning of consultation for this EP, Woodside provided a list of the cultural values known to Woodside that it believed relevant to the group and invited it to make changes or provide additional information (See Record of Consultation, 6.1.38). No changes were requested.	**(4)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Although no feedback, objections or claims were provided for this EP, historical cultural values considered relevant have been identified and included based on consultation and publicly available literature.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.

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- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in for other activities consultation or via desktop analysis of publicly available literature. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.13 Native Title representative bodies

4.13.1 Kimberley Land Council (KLC)

Kimberley Land Council is the Native Title Representative Body for the Kimberley region of Western Australia. As such, it is not a Prescribed Body Corporate or Registered Native Title Body Corporate but exists to assist Native Title claimants and holders. During consultation for this EP, KLC advised that there has been staffing changes. Woodside updated its records to reflect this.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed KLC advising of the proposed activity (Record of Consultation, reference 6.1.44). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed KLC a reminder about the proposed activity (SI Report B, reference 2.1.1). The email included:

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- A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
- A reminder that consultation for the preparation of the EP closes on 12 May 2026.
- A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
- Woodside's commitment to managing gender-restricted or other culturally sensitive information.
- Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 5 May 2025, KLC emailed Woodside to note staffing changes (SI Report B, reference 2.1.2).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.

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  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.13.2 Yamatji Marlpa Aboriginal Corporation (YMAC)

YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate representing the cultural rights of a Traditional Custodian Community but exist to assist native title claimants and holders.

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Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed YMAC advising of the proposed activity (Record of Consultation, reference 6.1.45). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed YMAC a reminder about the proposed activity (SI Report B, reference 2.2.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP.	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			

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Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.

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- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.14 Self-identified Indigenous Groups

4.14.1 Ngarluma Yindjibarndi Foundation Ltd (NYFL)

NYFL was created to act as Trustee for the Trust under the *Northwest Shelf Agreement 1998* struck between the Ngarluma and Yindjibarndi registered native title claimants, the NWS JVs and Woodside, prior to the resolution of the Ngarluma and Yindjibarndi native title claim. Its purpose is to carry on the business of enterprise development, investment and social welfare.

In 1999 the Ngarluma and Yindjibarndi native title claim was settled with the Federal Court appointing, at the request of the common law native title holders, the Ngarluma Aboriginal Corporation (NAC) as PBC to represent the communal interests of the Ngarluma people and the Yindjibarndi Aboriginal Corporation as PBC to represent the communal interests of the Yindjibarndi people. Woodside consulted both NAC and Yindjibarndi as relevant persons in the course of preparing this EP. NYFL self-identified and has advised it is relevant for this EP.

Since March 2024, Woodside and NYFL have been in communication about a draft consultation agreement. Woodside and NYFL have exchanged the draft consultation agreement a number of times during this period. Woodside has also travelled to Roebourne to meet with NYFL to progress negotiations and provided funding to NYFL for legal advice to finalise the agreement. During consultation for other EPs, NYFL has claimed that formal consultation had not taken place due to the absence of a finalised consultation agreement. Woodside has reiterated to NYFL on a number of occasions, including during consultation for this EP, that a consultation agreement is not a pre-requisite for consultation and that negotiations relating to a consultation agreement have and continue to occur in parallel to EP consultation. Discussions between Woodside and NYFL in relation to finalising this agreement remain ongoing.

Woodside has continually informed NYFL that it is open to receiving or being notified of feedback, claims or objections on EPs.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed NYFL advising of the proposed activity (Record of Consultation, reference 6.1.46). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.

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  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
  - Acknowledgement that discussions relating to a consultation framework agreement with Woodside has been ongoing and that these discussions will progress in parallel with consultation for the proposed activity's EP.
- On 30 April 2026, Woodside emailed NYFL a reminder about the proposed activity (SI Report B, reference 3.1.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- Between 1 to 18 May 2026, NYFL and Woodside exchanged emails relating a Consultation Agreement as well as a meeting (SI Report B, reference 3.1.2 – 3.1.5).
  - **(1)** The group raised the following feedback for consideration within the EP.
  - **(1)** Woodside responded to and addressed feedback from the group.

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan
(1) NYFL requested to continue discussions on the Consultation Agreement and provided an opportunity to meet and discuss.	**(1)** A consultation framework agreement is not a prerequisite for EP consultation. Consultation for this EP and others has occurred in parallel to any discussion about a framework agreement.	**(1)** Woodside has reminded NYFL that a consultation framework agreement is not a prerequisite for EP consultation.	**(1)** No action required.

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While feedback has been received, there were no objections or claims.	Woodside has assessed the merits of each objection or claim (if any) about the adverse impact of the activity to which the EP relates, as required under Regulation 24.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.
- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a "reasonable period" of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside's approach to consultation is appropriate and adapted because:

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- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside's initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside's Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- During the past 3 months, while feedback was received, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

4.15 Other Indigenous Groups

4.15.1 Save Our Songlines

SOS and/or [Individual 1] do not squarely fall within the consultation categories in the current Woodside methodology and are therefore considered in their own category. SOS is an organisation formed by [Individual 1], who we currently understand is the group's primary spokesperson. [Individual 1] and/or SOS are together represented by lawyers from Johnson Legal. During consultation for this EP, Johnson Legal advised that there has been staffing changes. Woodside updated its records to reflect this.

Woodside understands that the views expressed by SOS align with the views of [Individual 1]. Woodside therefore approaches communication with SOS and/or [Individual 1] as communication with SOS and has consulted them concurrently. The stated interests of [Individual 1] and/or SOS include the conservation of Murujuga rock art, and opposition to expansion of projects on the Burrup Peninsula. On the information available to us, we understand that SOS and/or [Individual 1] have also been members of Aboriginal corporations who have been separately consulted as relevant persons by Woodside. This is relevant because it confirms that cultural values or interests of those groups have been consulted on and assessed in preparing this EP. This context and process demonstrates that Woodside's consultation approach with SOS is appropriate and adapted to the nature and interests of SOS.

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Historical Information

During previous consultation for other activities, SOS and/or [Individual 1] has provided information relating to its cultural values which Woodside deem relevant to this EP:

- **(1,2,3,4)** Information on the cultural values related to the group that Woodside considers relevant to the activity.
- **(1,2,3,4)** Woodside has noted the cultural values and if relevant assessed risks in the EP.

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed SOS advising of the proposed activity (Record of Consultation, reference 6.1.47). The email included:
  - A Summary Information Sheet.
  - A link to the Consultation Information Sheet.
  - An overview of the proposed activity.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information* and contact details.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face-to-face.
  - A request for feedback by 12 May 2026 for the purposes of preparation of the EP.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - A request for the group to provide information about the proposed activity to other individuals as required.
- On 30 April 2026, Woodside emailed SOS a reminder about the proposed activity (SI Report B, reference 4.1.1). The email included:
  - A reference to the original consultation email for this EP sent on 13 April 2026, which included a Summary Information Sheet and a link to the Consultation Information Sheet.
  - A reminder that consultation for the preparation of the EP closes on 12 May 2026.
  - A request for information on the group's preferred ways to engage with Woodside about the proposed activity, including the opportunity to meet face to face.
  - Woodside's commitment to managing gender-restricted or other culturally sensitive information.
  - Advice that feedback can continue to be provided to Woodside during the life of an EP, including after consultation for the EP has closed, during EP assessment, and after an EP has been accepted by NOPSEMA.
- On 30 April 2026, SOS (via legal representative) emailed Woodside requesting to update the contact details of the legal representation (SI Report B, reference 4.1.2).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Response	Inclusion in Environment Plan

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(1) Cultural value Marine Species: • Whales: migratory patterns, behavioural impacts, sonar communication. • Turtles: migratory patterns. • Dugongs. • Plankton. • Seagrass. • Pygmy blue whales. • Pelagic fish. • Sharks. • Seabirds.	**(1)** This value has been identified through Woodside's data collection processes (consultation and Affidavit).	**(1)** Woodside acknowledges these interests and cultural values and assessed the potential impacts on there and where appropriate included controls.	**(1)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(2) Cultural value Totemic Species: • Bungarra. • Eagle. • Kangaroo.	**(2)** This value has been identified through Woodside's data collection processes (Affidavit).	**(2)** Woodside acknowledges these interests and cultural values and assessed the potential impacts on there and where appropriate included controls.	**(2)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(3) Cultural value Caring for Country: • Sea Country. • Rock Art. • Water Quality. • Murujuga.	**(3)** This value has been identified through Woodside's data collection processes (Affidavit).	**(3)** Woodside acknowledges these interests and cultural values and assessed the potential impacts on there and where appropriate included controls.	**(3)** Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
(4) Cultural value	**(4)**	**(4)**	**(4)**

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• Songlines, dreaming and energy lines, including where saltwater and freshwater meet.	This value has been identified through Woodside's data collection processes (Affidavit).	Woodside acknowledges these interests and cultural values and assessed the potential impacts on there and where appropriate included controls.	Woodside has updated Section 4.9 to record these interests and cultural values and assessed the potential impacts on these and where appropriate included controls in Sections 6.7, 6.8, 6.9 and 6.11.
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.	Woodside engages in ongoing consultation throughout the life of an EP	Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

Woodside has discharged its obligations for consultation under regulation 25 of the Environmental Regulations and consultation for the purpose of regulation 25 is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information

Sufficient information has been provided because:

- On 13 April 2026, Woodside made the Consultation Information Sheet available on the Woodside website.
- Woodside provided information on 13 April 2026 when consultation commenced. Woodside provided:
  - A Summary Information Sheet developed specifically for Traditional Custodian groups and reviewed by a member of the Indigenous Affairs team. This sheet included an overview of the proposed activity, the location of the activity, the timing of the activity, a summary of the potential risks and impacts of the activity, diagrams and details about how to provide feedback.
  - Links to the NOPSEMA *Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information*, and contact details.
  - Confirmation of the purpose of consultation, what was being sought by Woodside through consultation including understanding the nature of their interests and how the activity could impact those interests.
  - A request for the consultation and information sheets to be distributed to members and individuals as required.
  - An offer to provide more specific information, maps and images if required.
- Woodside provided contact information for Woodside and NOPSEMA.

Reasonable Period

A reasonable period for consultation in the preparation of the EP has been provided because:

- Woodside commenced consultation on this EP on 13 April 2026 and requested feedback by 12 May 2026 for the purposes of preparation of the EP in line with Woodside's methodology of a 30-day period for consultation.

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- Woodside has provided an opportunity to address and respond to feedback for more than three months, demonstrating a “reasonable period” of consultation.

Reasonable Opportunity

A reasonable opportunity to provide feedback has been provided and Woodside’s approach to consultation is appropriate and adapted because:

- Woodside sought direction on the preferred method of consultation and has consulted in a way that Woodside understands is appropriate for Traditional Custodian groups.
- Woodside has made information on this EP publicly available for more than three months. This has included publishing advertisements in national, state and local newspapers including Indigenous newspapers, the Koori Mail (22 April 2026) and National Indigenous Times (28 April 2026) advising of the proposed activities and requesting comments or feedback.
- Woodside’s initial email about this EP on 13 April 2026:
  - Included a general email address and telephone number for Woodside, as well as a direct email and telephone number for a dedicated focal person from Woodside’s Indigenous Affairs Engagement team. Woodside also provided contact details for NOPSEMA.
  - Offered for Woodside to speak with members as well as the Board.
  - Asked to advise how the group would like Woodside to engage and whether further information is required.
- Woodside offered to meet on a number of occasions.

Outcomes of Consultation

The measures (if any) that Woodside has adopted or proposes to adopt because of the consultation are appropriate because:

- No feedback or information was provided during consultation for this EP relating to cultural values, but the group has done so in consultation for other activities as well as from an Affidavit. Woodside has incorporated the groups interests and cultural values in Section 4.9.
- During the past 3 months, no objections or claims about the adverse impact of the activity to which this EP relates have been raised.

Woodside engages in ongoing consultation once an EP has been submitted for assessment as well as throughout the life of an EP. Should feedback be received after the EP has been accepted (including relevant new information relating to cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10 of the EP).

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5. TABLE 3: ENGAGEMENT REPORT WITH PERSONS OR ORGANISATIONS ASSESSED AS NOT RELEVANT

The black numbering **(N)** in the 'Summary of information provided and record of consultation for this EP' in Table 3 denotes an item raised by a person or organisation Woodside chose to contact. The green numbering **(N)** in this section denotes Woodside's response to that issue.

5.1 Commonwealth and WA State Government departments or agencies - environment

5.1.1 Department of Water and Environment Regulation (DWER)

Summary of information provided and record of consultation for this EP:

- On 14 April 2026, Woodside emailed DWER advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 15 April 2026, Woodside received an autogenerated response confirming a ticket number had been allocated, followed by advice the ticket had been marked as resolved (SI Report A, references 26.1 and 26.2).
- On 4 May 2026, as no feedback had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While DWER is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for DWER to provide feedback during the consultation process.			

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5.2 Commonwealth commercial fisheries and peak representative bodies

5.2.1 Southern Bluefin Tuna Fishery (SBTF)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed individual SBTF licence holders advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries in Section 4.10.1 of the EP. No additional measures or controls are required.

Summary Report – Consultation Complete

While SBTF is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for SBTF to provide feedback during the consultation process.

5.2.2 Western Skipjack Fishery

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed individual Western Skipjack Fishery licence holders advising of the proposed activity (Record of Consultation, reference 6.1.13), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Woodside has assessed the potential for interaction with Commonwealth managed commercial fisheries in Section 4.10.1 of the EP. No additional measures or controls are required.
Summary Report – Consultation Complete			
While Western Skipjack Fishery is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Western Skipjack Fishery to provide feedback during the consultation process.			

5.3 Other non-government groups or organisations

5.3.1 350 Australia (350A)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed 350A advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	No additional measures or controls are required.

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		EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	
Summary Report – Consultation Complete			
While 350A is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for 350A to provide feedback during the consultation process.			

5.3.2 Australian Conservation Foundation (ACF)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed ACF advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While ACF is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for ACF to provide feedback during the consultation process.			

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5.3.3 Australian Marine Conservation Society (AMCS)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AMCS advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 14 April 2026, as Woodside had received an email bounce-back, Woodside forwarded the email to a different AMCS address and reattached the Consultation Information Sheet (SI Report A, reference 27.1).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

While AMCS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AMCS to provide feedback during the consultation process.

5.3.4 Conservation Council of Western Australia (CCWA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed CCWA advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While CCWA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CCWA to provide feedback during the consultation process.			

5.3.5 Doctors for the Environment Australia (DEA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed DEA advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of	No additional measures or controls are required.

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		Change and Revision process (see Section 7.10.1 of the EP).	
Summary Report – Consultation Complete			
While DEA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for DEA to provide feedback during the consultation process.			

5.3.6 Friends of Australian Rock Art (FARA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed FARA advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While FARA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for FARA to provide feedback during the consultation process.			

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5.3.7 Greenpeace Australia Pacific (GPAP)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed GPAP advising of the proposed activity (Record of Consultation, reference 6.1.8), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'.
- On 14 April 2026, as Woodside had received an email bounce-back, Woodside forwarded the email to a different GPAP address and reattached the Consultation Information Sheet (SI Report A, reference 28.1).
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

While GPAP is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for GPAP to provide feedback during the consultation process.

5.3.8 Vocus

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Vocus advising of the proposed activity (Record of Consultation, reference 6.1.10), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also provided a map of communication cables in relation to the activity (Record of Consultation, reference 6.1.6).
- On 16 April 2026, Vocus emailed to acknowledge the consultation information (SI Report A, reference 29.1). Vocus raised **(1)**.
- On 16 April 2026, Woodside thanked Vocus for its response (SI Report A, reference 29.2). Woodside responded to **(1)**.

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
(1) Vocus advised that as the nearest point of the Highclere cable was more than 20km from the proposed activity, it had no feedback regarding the EP or associated conditions.	**(1)** Woodside acknowledges that due to the distance of Vocus's infrastructure from the activity, it has no feedback.	**(1)** Woodside thanked Vocus for confirming that based on activity location, it had no feedback.	**(1)** No additional measures or controls are required.
While feedback has been received, there were no objections or claims.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	Submarine communications infrastructure in proximity to the Operational Area is set out in Section 4.10.6 of the EP. No additional measures or controls are required.
Summary Report – Consultation Complete			
While Vocus is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Vocus to provide feedback during the consultation process.			

5.4 Research institutes and local conservation groups

5.4.1 Australian Institute of Marine Science (AIMS)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed AIMS advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from AIMS on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While AIMS is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for AIMS to provide feedback during the consultation process.			

5.4.2 Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed CSIRO advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from CSIRO on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate,	No additional measures or controls are required.

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		Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	
Summary Report – Consultation Complete			
While CSIRO is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for CSIRO to provide feedback during the consultation process.			

5.4.3 Western Australian Marine Science Institution (WAMSI)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed WAMSI advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from WAMSI on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While WAMSI is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for WAMSI to provide feedback during the consultation process.			

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5.4.4 University of Western Australia (UWA)

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed UWA advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from UWA on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.

Summary Report – Consultation Complete

While UWA is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for UWA to provide feedback during the consultation process.

5.4.5 Curtin University

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Curtin University advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from Curtin University on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

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Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While Curtin University is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Curtin University to provide feedback during the consultation process.			

5.4.6 Edith Cowan University

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Edith Cowan University advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from Edith Cowan University on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate,	No additional measures or controls are required.

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		Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	
Summary Report – Consultation Complete			
While Edith Cowan University is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Edith Cowan University to provide feedback during the consultation process.			

5.4.7 Murdoch University

Summary of information provided and record of consultation for this EP:

- On 13 April 2026, Woodside emailed Murdoch University advising of the proposed activity (Record of Consultation, reference 6.1.18), provided a Consultation Information Sheet, and a link to NOPSEMA's brochure '*Consultation on offshore petroleum environment plans: Information for the community*'. Woodside also sought advice from Murdoch University on any research activities it was undertaking that may overlap with the proposed activities.
- On 4 May 2026, as no response had been received, Woodside proactively sent a follow-up email (Record of Consultation, reference 6.2.1).

Summary of Feedback, Objection or Claim	Woodside's Assessment of Merits of Feedback, Objection or Claim about the adverse impact of the activity	Woodside's Statement of Response	Inclusion in Environment Plan
No feedback, objections or claims about the adverse impact of the activity received despite follow-up.		Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.10.1 of the EP).	No additional measures or controls are required.
Summary Report – Consultation Complete			
While Murdoch University is not a relevant person under regulation 25 of the Environment Regulations, Woodside considers it has still provided sufficient information and a reasonable period outside of regulatory requirements for Murdoch University to provide feedback during the consultation process.			

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6. RECORD OF CONSULTATION

6.1 Initial consultation

6.1.1 Consultation Information Sheet

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Woodside Energy

Consultation Information Sheet
April 2026

Goodwyn Alpha Facility Operations Environment Plan

Carnarvon Basin, North-West Australia

Activity overview

The Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP) is a five-year revision of the in-force EP, which covers:

- Continued operation of the GWA facility, which receives, extracts and processes dry gas and condensate from the Goodwyn, Echo/Yodel, Perseus/Searipple, Wilcox and Greater Western Flank fields.
- Export of dry gas and condensate via the Interfield Line, which ties into the second trunkline near the Woodside-operated North Rankin Complex (NRC) for transport to the Karratha Gas Plant onshore.
- Commissioning of up to seven (7) new production wells associated with Greater Western Flank developments.
- Vessel-based routine inspection, monitoring, maintenance and repair (IMMR) activities to support the GWA platform and associated subsea infrastructure.

Context

- The GWA facility forms part of the North West Shelf Project. Gas processed at the GWA platform is transported (via the existing Interfield Line and export trunkline) onshore to the Karratha Gas Plant) for final processing.

Location

- The GWA facility is located in Commonwealth waters approximately 138 km north-west of the town of Dampier and 23 km south-west of the NRC (Figure 2).

Water depth

- Approximately 74 m - 200 m deep.

Timing

- Production from the GWA facility commenced in 1995.
- End of field life is currently anticipated between 2036 and 2040.
- Decommissioning is not planned during the next 5 years. Any future decommissioning activities will be subject to separate approvals.

Duration

- Routine operations 24 hours a day, 365 days a year.
- IMMR activities take place as required.

Joint Venture

- Operator – Woodside Energy Ltd.
- Joint Venture – Woodside Energy Ltd., BP Developments Australia Pty. Ltd., Woodside Energy (North West Shelf) Pty Ltd, Chevron Australia Pty Ltd, Japan Australia LNG (MIMI) Pty. Ltd., CNOOC NWS Private Limited and Shell Australia Pty Ltd.

We would like to hear from you

We would like relevant persons whose functions, interests or activities may be affected by the proposed activity to have the opportunity to provide feedback on our proposed activity, in accordance with the intended outcome of consultation.

Woodside must consult relevant persons when developing an EP to confirm current measures or identify additional measures, which could lessen or avoid potential adverse effects of the proposed activity on the environment.

Woodside aims to ensure the proposed activity is consistent with the principles of ecologically sustainable development, by which the environmental impacts and risks of the activity are reduced to as low as reasonably practicable (ALARP) and of an acceptable level.

If you are an individual, organisation or community group and believe your functions, interests or activities may be affected by the activities under this EP, we would like your feedback by **14 May 2026.**

feedback@woodside.com
Toll free: 1800 442 977
woodside.com

A summary of the activity and location is found in **Table 1** and **2**.



Figure 1. Goodwyn Alpha (GWA) offshore facility.

Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to Indigenous Peoples and communities around the world.

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Activity location

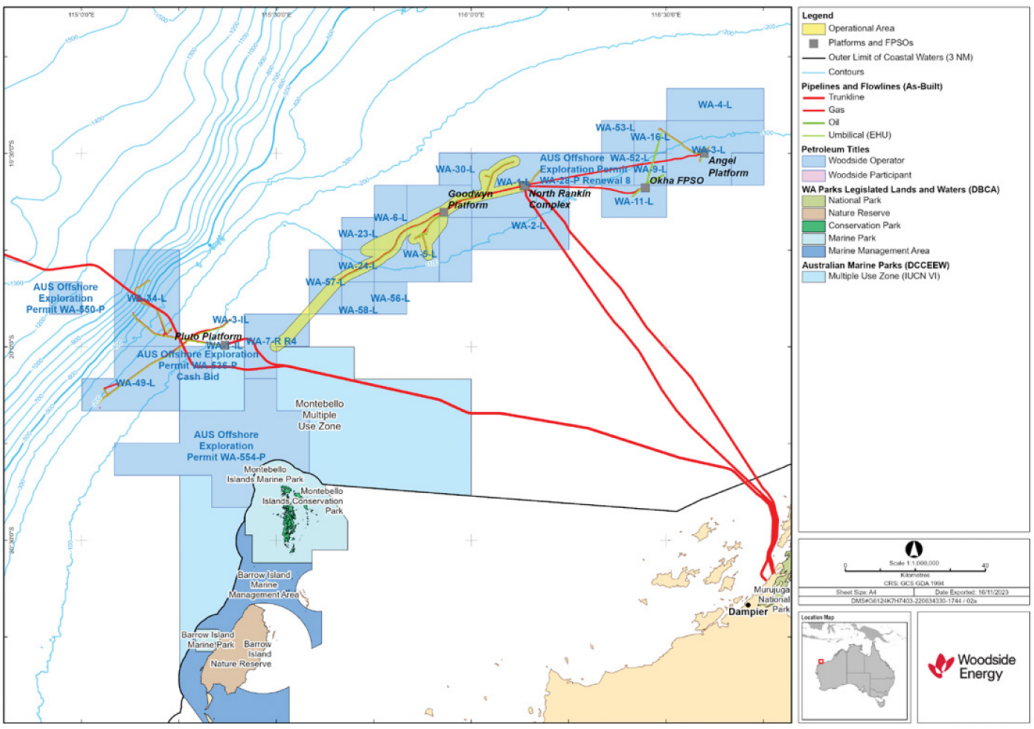


Figure 2. Location of the GWA Operational Area and associated infrastructure.

Table 1 – Activity and location summary

Goodwyn Alpha Facility Operations EP	
Activity details	• Processing and production of dry gas and condensate. • Routine and non-routine IMMR activities to support the GWA platform and associated subsea infrastructure. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (lifting, bunkering, support vessel and helicopter operations).
Titles	• Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. • Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, Xmas trees, manifolds, flowlines/pipelines, spools, jumpers and umbilicals associated with the Goodwyn, Perseus/Searipple and Greater Western Flank developments.
Vessels	• Platform support vessels undertake routine logistics and operational support. • IMMR vessels such as subsea support vessels and uncrewed surface vessels as well as accommodation and heavy lift vessels may be used as required. • Helicopters transport personnel and/or freight to and from the GWA facility and support vessels.
Operational Area and exclusion zones	• The location of the infrastructure and the exclusion zones are marked on nautical charts. The Operational Area includes: - The GWA platform and an area within 500 m Petroleum Safety Zone (PSZ) of the platform. - The Interfield Line between GWA and NRC and an area within 1500 m of the infrastructure. - The Echo/Yodel, Perseus over Goodwyn and Greater Western Flank subsea infrastructure, including wells, manifolds, flowlines, pipelines, umbilicals, jumpers and spools, and an area within 1500 m of the infrastructure. - New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure (see Table 2).
Communication with mariners	• Marine notices will be issued where vessels will be undertaking activities in the Operational Area (outside the 500 m PSZ around the GWA platform) for more than three weeks. • Commercial fishers and other marine users are permitted to use the Operational Area. Unauthorised vessels are prohibited from entering the PSZ.
Distance to nearest marine park/nature reserve	• The Operational Area overlaps the Montebello Marine Park - Multiple Use Zone (Cth).

[1] *The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.*
[2] *A new pipeline licence is required for the operation of the proposed GWF-4 flowline.*

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Table 2 – Approximate locations of key infrastructure

Structure	Water Depth (m)	Latitude	Longitude	Titles
GWA platform	131 m	19° 39' 07.936" S	115° 55' 47.028" E	WA-5-L
Existing Subsea Infrastructure				
19 platform wells	131 m	19° 39' 07.936" S	115° 55' 47.028" E	WA-5-L
IFL - GWA	130 m	19° 39' 07.332" S	115° 55' 48.509" E	WA-2-PL
IFL - NRA SSIV	124 m	19° 35' 06.290" S	116° 08' 15.023" E	WA-2-PL
Echo Yodel (EY) Pipeline – GWA Platform[a]	130 m	19° 39' 06.644" S	115° 55' 47.670" E	WA-9-PL
Echo Yodel (EY) Pipeline – Wellhead[a]	133 m	19° 44' 43.310" S	115° 44' 11.401" E	WA-9-PL
PoG Pipeline – GWA Platform	130 m	19° 39' 06.831" S	115° 55' 47.875" E	WA-13-PL
PoG Pipeline – Wellhead	127 m	19° 31' 11.736" S	116° 06' 39.297" E	WA-13-PL
GWF-1 Pipeline – GWA Platform	130 m	19° 39' 06.933" S	115° 55' 48.327" E	WA-24-PL
GWF-1 Pipeline – Manifold	111 m	19° 45' 44.068" S	115° 53' 24.368" E	WA-24-PL
GWF-2 Pipeline – GWA Platform	130 m	19° 39' 04.207" S	115° 55' 41.211" E	WA-27-PL
GWF2 Pipeline – LPA Manifold	~78 m	19°49'42.577"S	115°39'29.810"E	WA-27-PL
Proposed Subsea Infrastructure[b]				
GWF-4 Flowline – Wilcox Manifold	~74	19°59'48.35"S	115°30'02.71"E	TBC[3]
GWF-4 Flowline – LPA PLET	~78	19°49'47.04"S	115°39'25.55"E	
Proposed Production Wells (Subsea)[b]				
WCA01	~74	19° 59'55.284"S	115° 29'55.973"E	TBC[4]
WCA02	~74	19° 59'53.658"S	115° 29'55.989"E	
Y01	~131	19° 45'00.497"S	115° 43'49.734"E	WA-24-L
ESA01	~126	19° 45'15.456"S	115° 45'26.636"E	WA-24-L
TPA04	~112	19° 45'49.5400"S	115° 53'26.051"E	WA-5-L
GDA-06	~125	19°42'20.5892"S	115°52'20.0024"E	WA-5-L
ZOR-1	~124	19°40'51.158"S	115°55'26.379"E	WA-6-L
Existing Production Wells (Subsea)				
GDA03 well	125 m	19° 43' 04.890" S	115° 51' 58.911"E	WA-5-L
GDA04 well	125 m	19° 42' 35.697" S	115° 53' 14.475"E	WA-5-L
GDA05 well	125 m	19° 43' 15.968" S	115° 51' 10.743"E	WA-5-L
PER 01 Well	131 m	19° 33' 22.460" S	116° 02' 06.799" E	WA-1-L
PER 03 Well	130 m	19° 35' 29.270" S	116° 02' 33.259" E	WA-1-L
GDA01 Well	125 m	19° 42' 24.097" S	115° 52' 33.203" E	WA-5-L
GDA02 Well	125 m	19° 42' 24.097" S	115° 52' 33.203" E	WA-5-L
TPA01 Well	200 m	19° 45' 44.652" S	115° 53' 25.253" E	WA-5-L
TPA02 Well	200 m	19° 45' 44.996" S	115° 53' 23.982" E	WA-5-L
TPA03 Well	113 m	19° 45' 43.618" S	115° 53' 23.986" E	WA-5-L
LPA-01 well	77 m	19° 49' 46.337" S	115° 39' 29.415" E	WA-57-L
LPA-02 well	77 m	19° 49' 46.453" S	115° 39' 27.558" E	WA-57-L
LPA-03 well	77 m	19° 49' 45.485" S	115° 39' 28.597" E	WA-57-L
SRA-01 well	93 m	19° 47' 38.715" S	115° 46' 25.485" E	WA-24-L
SRA-02 well	93 m	19° 47' 39.845" S	115° 43' 24.273" E	WA-24-L
KDA-01 well	122 m	19° 45' 27.547" S	115° 47' 07.026" E	WA-5-L
KDA-02 well	122 m	19° 45' 27.547" S	115° 45' 08.228" E	WA-5-L
DOA-01 well	130 m	19° 43' 00.124" S	115° 48' 55.179" E	WA-6-L

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Structure	Water Depth (m)	Latitude	Longitude	Titles
Shut-In Production Wells				
PER 02 Well[c]	127 m	19° 31' 11.700" S	116° 06' 39.350" E	WA-1-L
PER 04 Well[c]	128 m	19° 31' 06.500" S	116° 05' 53.639" E	WA-1-L

[3]*A new pipeline licence is required for operation of the proposed GWF-4 flowline.*
[4]*The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.*

NOTES:
a – Echo Yodel (EY) Pipeline is suspended and isolated. Activities associated with decommissioning are provided for under the approval of the EY Decommissioning EP (NOPSEMA Doc ID A728912). Maintenance continues under this EP until decommissioning activity commences.
b – These are approximate locations based on current engineering designs.
c – PER 02 and 04 wells are production wells no longer in use (i.e. shut in and designated redundant). PER 02 and PER 04 will continue to be subject to subsea inspection until final abandonment. Plug and abandonment will be undertaken as part of the NWS Phase 1 P&A and TPA03 Well Intervention EP, currently scheduled for 2026. Remaining infrastructure will be managed under this EP until completion of all decommissioning activities in the field.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA was developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations. The EMBA is depicted in **Figure 3.**

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release. To learn more about an EMBA, please see the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) video on oil spill modelling at **www.nopsema.gov.au.**

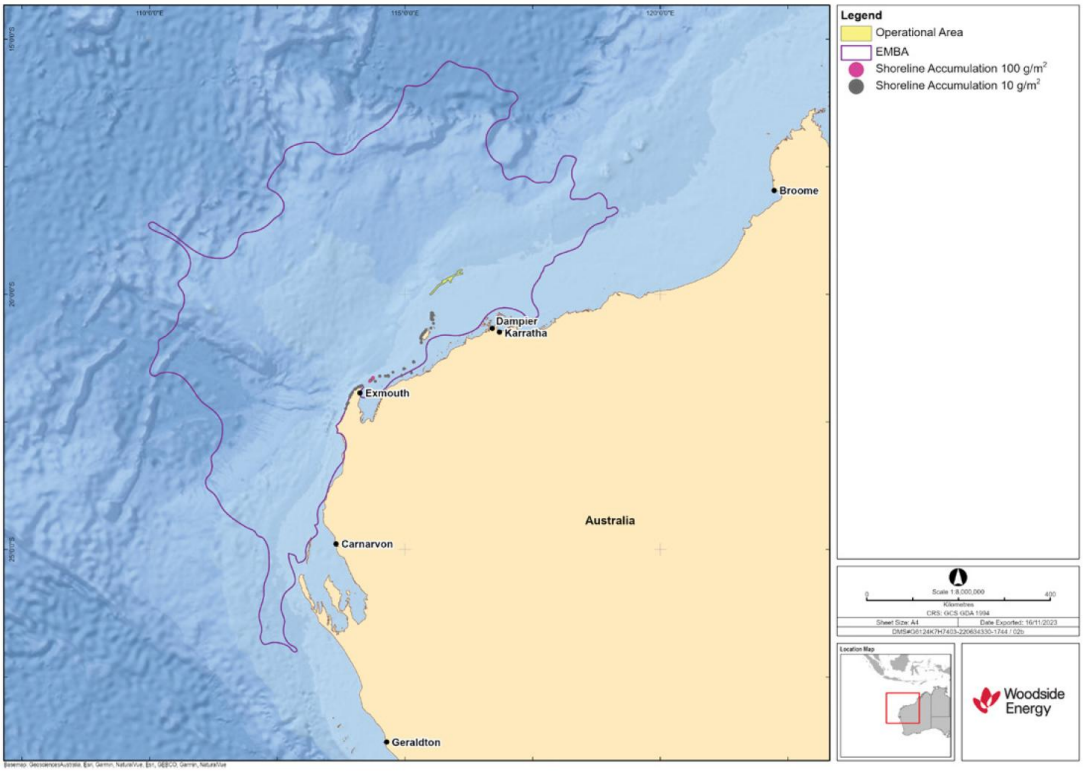


Figure 3. Environment that May Be Affected (EMBA) by activities under the GWA Facility Operations EP.

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Impacts/Risks, and Mitigation and/or Management Measures

Woodside assessed the impacts and risks to the environment arising from the planned activities and unplanned events. This assessment considers the timing, duration and location of the activities. Proposed mitigation and management measures are summarised in **Table 3.** Further details will be provided in the EP.

In preparing the EP, Woodside's intent is to minimise environmental, social and cultural impacts and risks associated with the proposed activities, and Woodside seeks your feedback to help inform our decision-making.

Table 3 – Summary of impacts and risks and key proposed management measures*

Aspect	Description of Source of Impact	Description of Impact	Proposed Mitigation and/or Management Measure
Planned activities (routine and non-routine)			
Physical Presence: ***Interaction with other Marine Users***	• Physical presence of the GWA facility and subsea Infrastructure as well as support vessels.	• Localised impacts with no lasting effect may occur as a result of: - Localised displacement or exclusion of commercial fishing operations from the PSZ and during intermittent IMMR activities. - Localised exclusion of shipping traffic from the PSZ and during intermittent IMMR activities.	• Vessels are compliant with Marine Orders for safe vessel operation. • 500 m PSZ around the GWA platform. • Subsea infrastructure locations marked on marine charts. • Notify Australian Hydrographic Office (AHO) of locations of new permanent infrastructures to enable update of maritime charts. • Notices will be issued where vessels will be undertaking activities in the Operational Area (outside the 500 m PSZ around the GWA platform) for more than three (3) weeks.
Physical Presence: ***Disturbance to Seabed***	• Seabed disturbance may result from the following activities: - Presence of the GWA facility, subsea infrastructure, wet parked equipment and IMMR activities on seafloor. - Physical presence of redundant infrastructure remaining infield until end of field life. - Anchoring as required in emergency conditions.	• Slight and low-level impact on seabed habitat may occur as a result of: - Footprint of subsea infrastructure including suspended infrastructure until EOFL. - Disturbance from direct interaction with the seabed during IMMR activities. - Indirect disturbance from suspended sediment and sediment deposition.	• Monitoring and maintenance of all suspended and subsea infrastructure completed as per IMMR process. • ROV surveys undertaken after maintenance or repair activities to confirm temporary equipment has been removed and to record location of any new or suspended subsea infrastructure. • Vessels used for IMMR activities will be dynamic positioning capable. • Comply with regulatory requirements for Underwater Cultural Heritage. • Implement Woodside's Unexpected Finds Procedure.
Routine Acoustic Emissions: ***Generation of Noise***	• Noise generated within the Operational Area from: - GWA facility and associated subsea infrastructure; - Support vessels and helicopters; and - Vessel-based IMMR activities.	• Localised impacts with no lasting effect may occur as a result of: - Temporary behavioural disturbance to marine fauna around infrastructure and vessels.	• Comply with regulatory requirements for interactions with marine fauna. • Environmental induction of all relevant marine crew.
Routine and Non-Routine Discharges: ***Utility Systems and Drains***	• Discharges within the Operational Area from the GWA platform and support vessels.	• Slight and low-level impact on marine water quality may occur as a result of: - Discharge of brine, cooling water, drain, deck drainage, bilge water, grey water, sewage and putrescible waste.	• Marine discharges managed in accordance with regulatory requirements. • Putrescible waste from GWA facility macerated prior to overboard discharge.

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Aspect	Description of Source of Impact	Description of Impact	Proposed Mitigation and/or Management Measure
Routine and Non-Routine Discharges: ***Produced Water***	• Discharges within the Operational Area from the GWA platform.	• Slight and low-level impacts on marine sediments and water quality as well as ecosystems may occur as a result of: - Discharge of produced water.	• Monitoring oil in water concentrations in accordance with PARCOM 1997/16 Annex 3 methodology.
Routine and Non-Routine Discharges: ***Hydrocarbon and Chemicals***	• Discharges within the Operational Area from subsea infrastructure and submersible equipment.	• Slight and low-level impacts on marine sediments and water quality as well as ecosystems may occur as a result of: - Discharge of small volumes of hydrocarbons and chemicals during subsea operations.	• Chemicals selected with the lowest practicable environmental impacts subject to technical constraints and approved through the Woodside chemical assessment process. • Subsea infrastructure flushed where practicable to reduce volume/concentration of hydrocarbons released to the environment.
Routine and Non-Routine Air Emissions: ***Atmospheric and Greenhouse Gas (GHG)***	• Atmospheric and GHG emissions generated through fuel combustion associated with the GWA facility, support vessels and helicopters as well as fugitive emissions. • Onshore processing of gas, third-party transportation, regassification and combustion by end users.	• Localised impacts with no lasting effect may occur as a result of: - Temporary and localised reductions in air quality. The activity will also contribute to global GHG emissions.	• Comply with regulatory requirements relating to GHG emissions and reporting. • Monitoring, review and optimisation of facility fuel use and emissions, where possible.
Routine Atmospheric Emissions: ***Indirect emissions associated with gas processing onshore***	• Consideration of potential indirect impact associated with atmospheric emissions from onshore processing of GWA gas.	• Potential indirect impacts may include: - Reduction in ambient air quality. - Contribution to processes that may impact the rock art on the Burrup Peninsula and within the Dampier Archipelago (Murujuga).	• Karratha Gas Plant is subject to assessment and compliance under the Environmental Protection Act 1986 (WA). • The Murujuga Rock Art Strategy and Monitoring Program (MRAS/MRAMP), administered by DWER and MAC, provides a long-term framework for monitoring, analysis and management of potential impacts to rock art.
Routine Light Emissions	• Light generated within the Operational Area from: - External lighting and operational flaring at the GWA facility. - External lighting on support vessels. - External lighting on submersible equipment.	• Localised impacts with no lasting effect may occur as a result of: - Temporary behavioural disturbance to fish, marine reptiles and seabirds.	• Lighting limited to the minimum required for navigational and safety requirements, except for emergency events. • Implementation of Woodside's Seabird Management Plan. • Environmental induction of all relevant marine crew.
Aspect	**Description of Source of Risk**	**Description of Risk**	**Proposed Mitigation and/or Management Measure**
Unplanned events (accidents / incidents)			
Unplanned Release: ***Hydrocarbons and Chemicals***	• Accidental loss of hydrocarbons during bunkering/refuelling and chemicals during transfer, storage and use.	• Potential minor impacts on marine water quality and species including: - Temporary decrease in water quality; and - Temporary disruption to marine fauna.	• Comply with Marine Orders to prevent pollution events. • Implement Woodside's bunkering procedures. • Chemicals selected with the lowest practicable environmental impacts subject to technical constraints and approved through the Woodside chemical assessment process. • Safe storage of diesel and chemicals.
Unplanned Discharges: ***Hazardous and Non-hazardous Waste Management***	• Accidental loss of solid wastes generated by the facility or vessels including packaging, domestic wastes and hazardous wastes such as oil rags, batteries and waste oil.	• Potential localised impacts with no lasting effect may occur as a result of: - Pollution and contamination of the marine environment. - Injury or death of marine fauna (single animal), including protected species.	• Comply with Marine Orders to prevent pollution events. • Implement Woodside's Offshore Facilities Waste Management Plan. • Solid waste will be recovered, if safe and practicable to do so.

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Aspect	Description of Source of Risk	Description of Risk	Proposed Mitigation and/or Management Measure
Physical Presence: ***Interactions with Marine Fauna***	• Accidental interaction between support vessels and marine fauna.	• Potential localised impacts with no lasting effect may occur as a result of: - Injury or death to marine fauna (single individual) including protected species.	• Comply with regulatory requirements for interactions with marine fauna. • Environmental induction of all relevant marine crew.
Physical Presence: ***Introduction of Invasive Marine Species (IMS)***	• IMS in vessel ballast or on vessels and/or submersible equipment.	• Potential slight and low-level impacts on species, ecosystems or socio-economic receptors may occur as a result of: - Introduction of IMS which may alter the localised environment through predation, competition or interspecies breeding.	• Comply with Australian Ballast Water Management Requirements and the Australian Biofouling Management Requirements, as applicable. • Implement Woodside's IMS risk assessment process to support vessels and immersible equipment entering the Operational Area.
Unplanned Hydrocarbon Release: ***Loss of Well Containment***	• Loss of well containment resulting in release of hydrocarbons.	• Potential major impacts to the marine environment, including: - Marine sediment and water quality - Air quality - Nearshore areas of offshore islands and coastal shorelines. - Marine fauna including protected species. - Interference with or displacement of other marine users.	**Preventing loss of well containment** • The activity is operated in compliance with the accepted Safety Case. • Maintain Fire and Gas Detection and Alarm Systems on GWA facility to facilitate prevention and response to fire or gas hazards. **Spill response arrangements** • Maintain availability of external and internal communication systems and Safety Instrumented System to facilitate prevention and response to accidents and emergencies. • Maintain environmental incident response equipment to enact the GWA Oil Pollution First Strike Plan. • In the event of a spill emergency response activities implemented in accordance with the OPEP. • Arrangements supporting the activities in the OPEP will be tested so that the OPEP can be implemented.
Unplanned Hydrocarbon Release: ***Subsea Equipment Loss of Containment***	• Loss of subsea equipment containment resulting in release of hydrocarbons.	• Potential major impacts to the marine environment, including: - Marine sediment and water quality - Air quality - Nearshore areas of offshore islands and coastal shorelines. - Marine fauna including protected species. - Interference with or displacement of other marine users.	**Preventing subsea equipment loss of containment** • The activity is operated in compliance with the accepted Safety Case. • Maintain Fire and Gas Detection and Alarm Systems on GWA facility to facilitate prevention and response to fire or gas hazards. **Spill response arrangements** • Maintain availability of external and internal communication systems and Safety Instrumented System to facilitate prevention and response to accidents and emergencies. • Maintain environmental incident response equipment to enact the GWA Oil Pollution First Strike Plan. • In the event of a spill emergency response activities implemented in accordance with the OPEP. • Arrangements supporting the activities in the OPEP will be tested so that the OPEP can be implemented.
Unplanned Hydrocarbon Release: ***Topsides Loss of Containment***	• Loss of topsides containment resulting in release of hydrocarbons.	• Potential moderate impacts to the marine environment, including: - Marine water quality - Air quality - Nearshore areas of offshore islands and coastal shorelines. - Marine fauna including protected species. - Interference with or displacement of other marine users.	**Preventing topsides loss of containment** • The activity is operated in compliance with the accepted Safety Case. • Maintain Fire and Gas Detection and Alarm Systems on GWA facility to facilitate prevention and response to fire or gas hazards. **Spill response arrangements** • Maintain availability of external and internal communication systems and Safety Instrumented System to facilitate prevention and response to accidents and emergencies. • Maintain environmental incident response equipment to enact the GWA Oil Pollution First Strike Plan. • In the event of a spill emergency response activities implemented in accordance with the OPEP. • Arrangements supporting the activities in the OPEP will be tested so that the OPEP can be implemented.

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Aspect	Description of Source of Risk	Description of Risk	Proposed Mitigation and/or Management Measure
Unplanned Hydrocarbon Release: ***Loss of Structural Integrity***	• Loss of subsea infrastructure containment resulting in release of hydrocarbons.	• Potential major impacts to the marine environment, including: - Marine sediment and water quality - Air quality - Nearshore areas of offshore islands and coastal shorelines. - Marine fauna including protected species. - Interference with or displacement of other marine users.	**Preventing loss of structural integrity** • The activity is operated in compliance with the accepted Safety Case. • Maintain Fire and Gas Detection and Alarm Systems on GWA facility to facilitate prevention and response to fire or gas hazards. • Woodside management system is implemented during operations to maintain infrastructure integrity, communication systems and safety instrumented systems to an acceptable standard. **Spill response arrangements** • Maintain availability of external and internal communication systems and Safety Instrumented System to facilitate prevention and response to accidents and emergencies. • Maintain environmental incident response equipment to enact the GWA Oil Pollution First Strike Plan. • In the event of a spill emergency response activities implemented in accordance with the OPEP. • Arrangements supporting the activities in the OPEP will be tested so that the OPEP can be implemented as planned.
Unplanned Hydrocarbon Release: ***Loss of Marine Vessel Separation***	• Loss of marine vessel separation resulting in release of hydrocarbons.	• Potential major impacts to the marine environment, including: - Marine sediment and water quality - Air quality - Nearshore areas of offshore islands and coastal shorelines. - Marine fauna including protected species. - Interference with or displacement of other marine users.	**Preventing loss of marine vessel separation** • The activity is operated in compliance with the accepted Safety Case. • Maintain collision warning systems and navigational aids and critical communications systems. • Woodside management system is implemented during operations to maintain infrastructure integrity, communication systems and safety instrumented systems to an acceptable standard. **Spill response arrangements** • Maintain availability of external and internal communication systems and Safety Instrumented System to facilitate prevention and response to accidents and emergencies. • Maintain environmental incident response equipment to enact the GWA Oil Pollution First Strike Plan. • In the event of a spill emergency response activities implemented in accordance with the OPEP. • Arrangements supporting the activities in the OPEP will be tested so that the OPEP can be implemented as planned.
Unplanned Hydrocarbon Release: ***Loss of Control of Suspended Load from Platform***	• Loss of topsides or subsea infrastructure containment resulting from a loss of control of a suspended load from the platform.	• Potential moderate impacts to the marine environment, including: - Marine water quality - Air quality - Nearshore areas of offshore islands and coastal shorelines. - Marine fauna including protected species. - Interference with or displacement of other marine users.	**Preventing loss of control of suspended load** • The activity is operated in compliance with the accepted Safety Case. • Woodside management system is implemented during operations to maintain infrastructure integrity, communication systems and safety instrumented systems to an acceptable standard. **Spill response arrangements** • Maintain availability of external and internal communication systems and Safety Instrumented System to facilitate prevention and response to accidents and emergencies. • Maintain environmental incident response equipment to enact the GWA Oil Pollution First Strike Plan. • In the event of a spill emergency response activities implemented in accordance with the OPEP. • Arrangements supporting the activities in the OPEP will be tested so that the OPEP can be implemented.

** These mitigation and management measures are subject to change through the consultation and subsequent assessment process and may not represent content in the publicly available EP or in the final plan once accepted.*

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Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the proposed activities and to obtain relevant feedback to inform its planning.

If you would like to comment on the proposed activities outlined in this information sheet, please provide feedback to Woodside by **14 May 2026** via:

feedback@woodside.com
Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities:
woodside.com/what-we-do/consultation-activities

Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate any material changes to the proposed activity to affected relevant persons as relevant and appropriate.

Your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth) and support other regulatory processes associated with the planned activities (which may or may not be confidential).

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit:
woodside.com/what-we-do/consultation-activities



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6.1.2 Summary Information Sheet

Woodside Energy

Consultation Summary Information Sheet
April 2026

Goodwyn Alpha Facility Operations Environment Plan

Carnarvon Basin, North-West Australia (Commonwealth Waters)

Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

Have Your Say

We want to talk, share ideas, and yarn with local community who have a deep connection to the land and sea. Your knowledge helps us do our work better!

We want to understand the environments we want to work in. We want to work in a way which manages the environmental impacts and risks of the activities appropriately. By working together, we want to help protect cultural heritage and keep the Land and Sea Country healthy.

We welcome feedback from Indigenous communities and stakeholders whose functions, interests and activities may be affected by our activities under this Environment Plan (EP). If you'd like to share your views, please contact us before **12 May 2026.**

Email: **IndigenousAffairs@woodside.com**
Call: **1800 442 977 (toll-free)**
Visit: **woodside.com/what-we-do/consultation-activities**

Your feedback will be included in our EP submissions to NOPSEMA (National Offshore Petroleum Safety and Environmental Management Authority) and will help guide responsible environmental decision-making.



Figure 1. Goodwyn Alpha (GWA) offshore facility.

Activity overview

The Goodwyn Alpha (GWA) facility forms part of the North West Shelf Project. The GWA Facility Operations Environment Plan (EP) is a five-year revision of the in-force EP, which covers:

- Continued operation of the GWA facility, which receives, extracts and processes dry gas and condensate from the Goodwyn, Echo/Yodel, Perseus/Searipple, Wilcox and Greater Western Flank fields.
- Export of dry gas and condensate via the Interfield Line, which ties into the second trunkline near the Woodside-operated North Rankin Complex (NRC) for transport to the Karratha Gas Plant onshore.
- Commissioning of up to seven (7) new production wells associated with Greater Western Flank developments.
- Vessel-based routine inspection, monitoring, maintenance and repair (IMMR) activities to support the GWA platform and associated subsea infrastructure.

Location

- The GWA facility is located in Commonwealth waters approximately 138 km north-west of the town of Dampier and 23 km south-west of the NRC.

Water depth

- Approximately 74 m - 200 m deep.

Timing & Duration

- Production from the GWA facility commenced in 1995.
- End of field life is currently anticipated between 2036 and 2040.
- Decommissioning is not planned during the next 5 years. Any future decommissioning activities will be subject to separate approvals
- Routine operations 24 hours a day, 365 days a year.
- IMMR activities take place as required.

Joint Venture

- Operator – Woodside Energy Ltd.
- Joint Venture – Woodside Energy Ltd., BP Developments Australia Pty. Ltd., Woodside Energy (North West Shelf) Pty Ltd, Chevron Australia Pty Ltd, Japan Australia LNG (MIMI) Pty. Ltd., CNOOC NWS Private Limited and Shell Australia Pty Ltd.

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Activity Location

The EP explains how Woodside will manage environmental risks and impacts while carrying out our activities. These plans help us conduct operations safely and responsibly, with respect for the environment and cultural heritage. The location where the work will be done is known as the Operational Area (**Figure 2**).

Woodside must consult with relevant persons, including Traditional Custodian groups whose functions, interests or activities may be affected by the activities to be carried out under the EP or that are considered relevant, to listen to concerns and, where required, incorporate feedback into the EP.

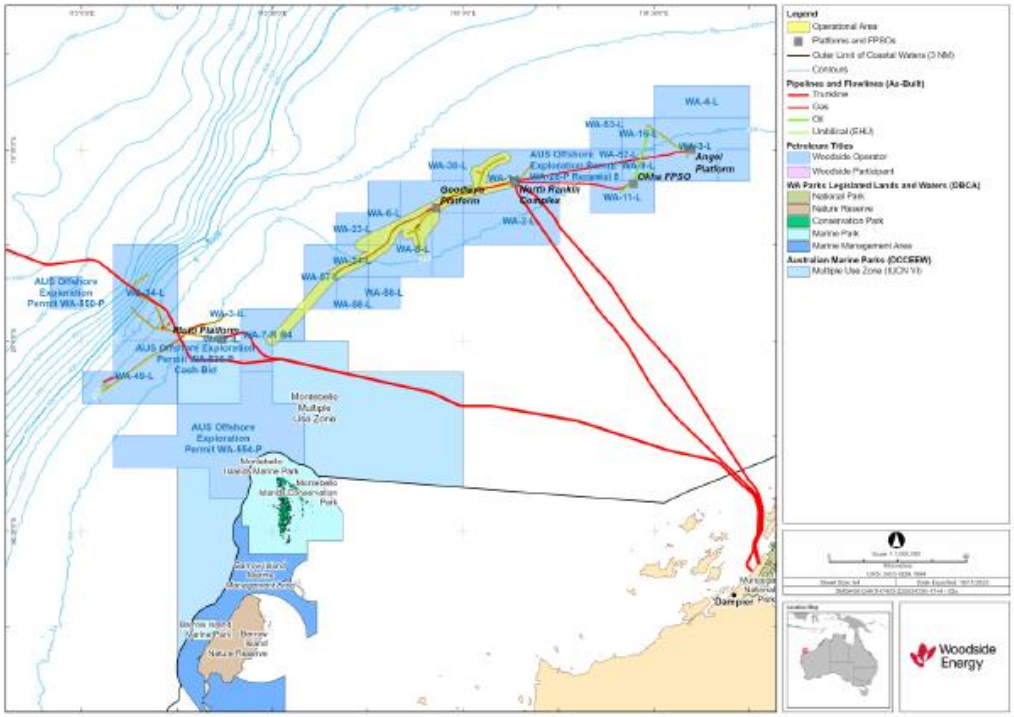


Figure 2: Location of the activity, including Operational Area and associated infrastructure

Planned Activities and Unplanned Events

We assess both planned activities and unplanned events which may result in environmental risks and impacts.

Planned activities are activities that Woodside knows will happen as part of the work under the EP. This could include generating underwater noise, light emissions, associated atmospheric emissions or routine discharges (such as sewage, waste, and deck drainage). We take steps so that planned activities comply with legislative and regulatory requirements.

Unplanned events are very unlikely. They may be the result of an accident, incident or emergency, such as a spill of fuel or oil from a ship (vessel) collision, a spill on the deck of a vessel (like during refuelling), unplanned seabed and/or marine life disturbance, or accidental introduction of invasive species from outside the region.

Planned and unplanned activities, potential impacts, and management measures are included in the Consultation Information Sheet for this activity, available at www.woodside.com/what-we-do/consultation-activities.

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Environment that May Be Affected (EMBA)

The EMBA map (**Figure 3**) is a model of the largest spatial area where the activity could have a potential environmental impact. It combines multiple modelling outputs for both planned and unplanned activities in the highly unlikely event of an oil and natural gas (hydrocarbon) release to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not show the predicted impact of a single event - it is the merged area of many possible scenarios that a highly unlikely hydrocarbon release could travel, depending on the weather and ocean conditions at the time. This means that if a hydrocarbon release was to occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known at the time of a release.

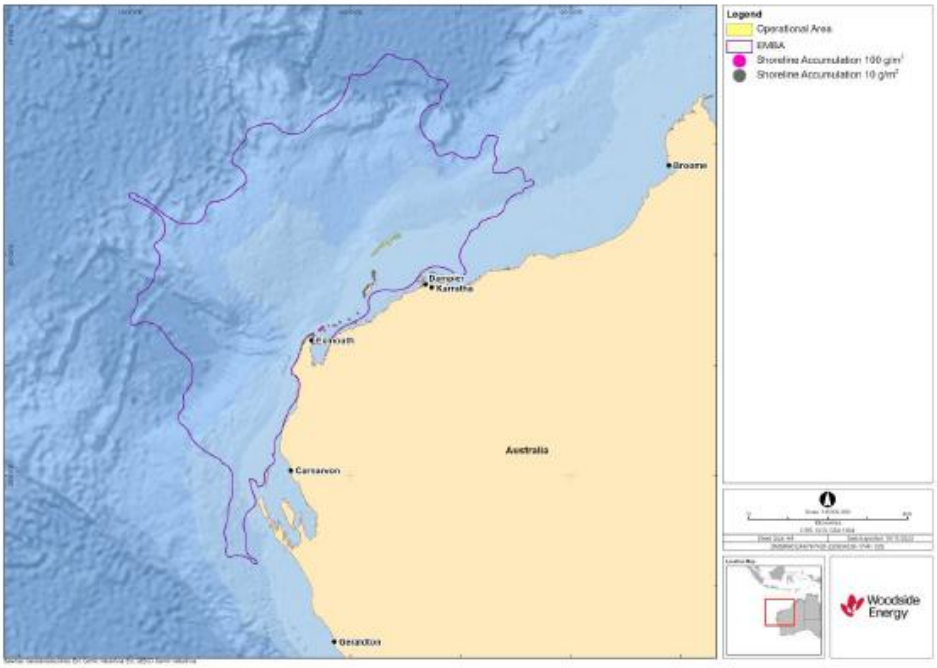


Figure 3: Environment that May Be Affected (EMBA) map

Your Feedback is Important

Woodside consults with relevant persons during the preparation of EPs to notify them about the activity and hear their feedback. By working together, we aim to protect biodiversity and maintain the health of ecosystems while carrying out our projects.

Your feedback helps shape the EP by:

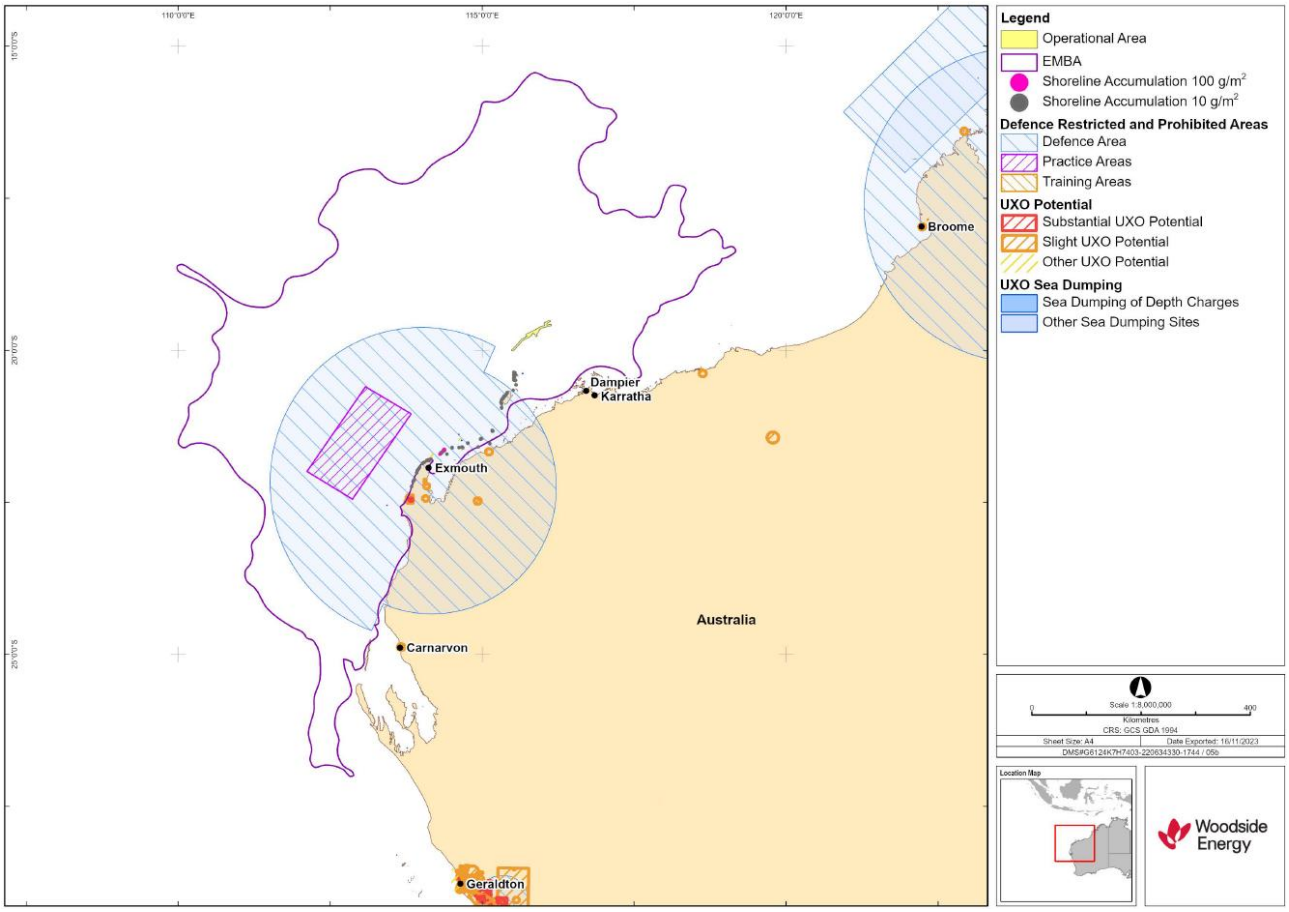
- Identifying additional possible measures to reduce environmental impacts.
- Helping us consider cultural heritage and environmental values.
- Providing information that may help improve Woodside's environmental practices.

If there is particular information that you provide during consultation that you'd prefer not to be published, please let us know. We'll make your request known to NOPSEMA.

We'll manage any personal information collected during our consultation with you in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand more, please visit www.woodside.com/what-we-do/consultation-activities.

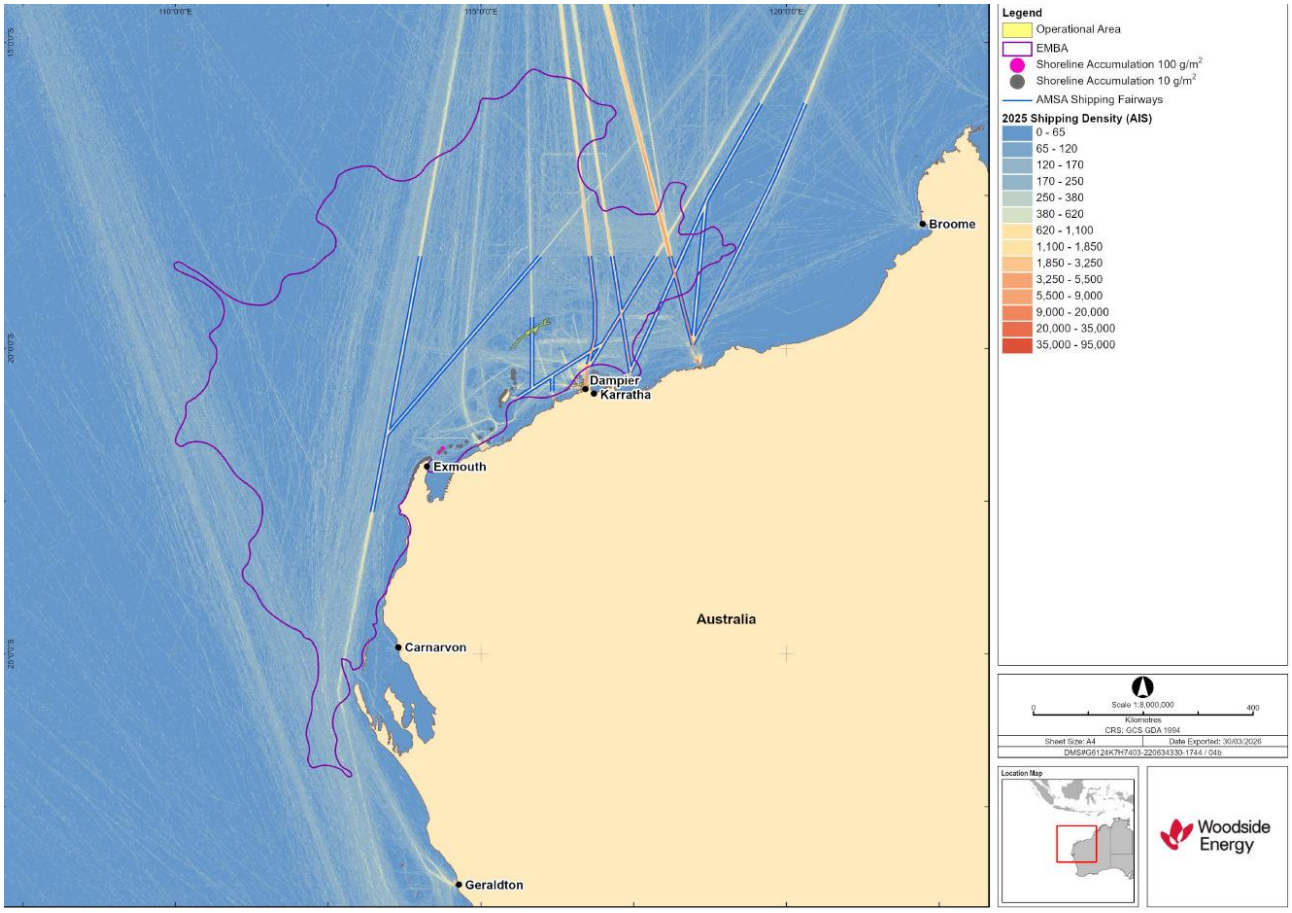
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6.1.3 Defence zones map



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6.1.4 Vessel density map



6.1.5 Shipwrecks

6.1.5.1 Commonwealth

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Goodwyn Alpha (GWA) Facility Operations EP: Commonwealth Historical Shipwrecks

Vessel name	Type of vessel	When Lost	Where Lost	Latitude	Longitude
Agnes	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Amelia	Sailing vessel	1874	Shark Bay	-24.5	113
Anxiety	Sailing vessel	1898	Shark Bay area	-24.25	112
Beatrice	Sailing vessel	1899	Off North-West Cape	-21.61666667	113.9833333
Bell	Sailing vessel	1893	Exmouth	-21.75	114.0833333
Benan	Sailing vessel	1888	Point Cloates	-22.74151667	113.6745
Bertha	Sailing vessel	1874	Reef off Point Cloates	-22.55	113.5
Chofuku Maru	Twin screw steamer	1931	Point Cloates	-22.51755	113.6629833
Cock Of The North	Sailing vessel	1879	Point Cloates	-22.55	113.5
Correio da Azia	Sailing vessel	1816	Point Cloates	-22.8628	113.7450667
Crighton	Launch	1921	Island Homestead	-24.25	112
Curlew	Sailing vessel	1911	At Onslow, Monte Bellos Group	-20	115.1666667
Dampier	Trawler		Enderby Island, Dampier Archipelago	-20.52333333	116.2366667
Don Joseph	Sailing vessel	1899	6.5 Kilometres North of Point Cloates	-22.61666667	113.6
Dot	Sailing vessel	1893	Shark Bay	-24.5	113
Elizabeth	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Ellen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Emlyn Castle	Unknown	1960		-21.78472167	114.165
Emma	Sailing vessel	1867	Coral Bay	-23.08255	113.7335
Eveline	Sailing vessel	1893	Shark Bay	-24.5	113
Fin	Single screw steamer	1923	Point Cloates, Fraser Island	-22.6476	113.6282667
Florence	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
G.G.S.	Sailing vessel	1883	Pt Cloates	-22.55	113.5
Gem	Sailing vessel	1893	North West Cape	-21.61666667	113.9833333
Genesta	Unknown	1909	Off Dorre Island	-24.83333333	112.9333333
Gift	Sailing vessel	1898	Shark Bay Area	-24.25	112
Haw Kiet	Unknown	2003		-18.45816667	117.2583333
Hawk	Sailing vessel		Around 55 kilometres south of the Cape at Carbaddaman Passage	-22.45	113.73333
Hildas	Sailing vessel	1893	Shark Bay	-24.5	113
Idahlia	Sailing vessel	1898	Shark Bay, Willieman	-24.25	112
Iona	Sailing vessel	1923	Point Cloates, entering Black Rock Passage	-22.8	113.6333333
Jane Bay One Unidentified	Unknown		Jane Bay	-22.732317	113.73212
Jane Bay Two Unidentified			Jane Bay, Point Cloates	-22.73785	113.739983
Just In Time	Sailing vessel	1898	Williemia	-24.25	112
Kapala	Unknown	1964	Exmouth Gulf	-21.75	114.0833333
Lady Ann	Sailing vessel	1982	24 miles north of NW Cape	-21.4	114.2
Lamareaux	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Leave	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Lily Of The Lake	Sailing vessel	1875	Exmouth Gulf	-21.75	114.0833333
Louisa	Sailing vessel	1893	Shark Bay	-24.5	113
Mabel	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Maratta	Unknown	1905		-20.72783333	115.4261167
Marietta	Unknown	1905	Barrow Island	-20	115.1666667
Marutta	Unknown	1905		-20.72783333	115.4261667

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Matchless	Sailing vessel	1893	Shark Bay	-24.5	113
Mauds Landing				-23.113944	113.775461
McCormack		1989	N.E. tip of Eaglehawk Island West of Dampier,	-20.13666667	115.9533333
McDermott Derrick Barge No 20	Barge	1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	-20.13666667	115.9533333
Mildura	Twin screw steamer	1907	North-West Cape	-21.784092	114.167735
Nellie	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Occator	Sailing vessel	1856	Around 55 kilometres south of the Cape at Carbaddaman Passage	-22.41666667	113.6833333
Olive	Sailing vessel	1916	Dorre Island, Carnarvon	-24.85	112.9166667
Olive	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Parks Lugger	Sailing vessel		Hermite Island. Montebello Islands	-20.477082	115.528518
Patience	Sailing vessel	1930	Between Red Bluff and Cape Cuvier	-24	113.2
Pearl	Sailing vessel	1896	Exmouth Gulf, Meda Creek	-21.75	114.0833333
Pearline	Sailing vessel	1893	Shark Bay	-24.5	113
Perentie	Unknown	1976	Barrow Island	-20.72783333	115.4261667
Perseverant's Boat	Unknown	1841	South of Java Head	-24.25	112
Perseverant's Boat	Unknown	1841		-24.25	112
Perth	Twin screw steamer	1887	Point Cloates	-22.69246667	113.6422667
Plym HMS	Frigate	1952		-20.40346667	115.5658333
Point Cloates Unidentified	Unknown		Near Correio da Azia site	-22.86343333	113.7506667
Prince Charlie	Sailing vessel	1850	Shark Bay	-24.5	113
Queen	Sailing vessel	1891	Off Point Cloates	-22.55	113.5
Raconteur ex-Nanango		1976	Bernier Island	-24.787144	113.16404
Rapid	Sailing vessel	1811	Ningaloo Reef	-22.739438	113.692643
Rose	Sailing vessel	1908	Ashburton	-21.58333333	114.8333333
Ruby	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
S.S.S.	Unknown	1901	Off Point Cloates	-22.65	113.5833333
Sarah	Sailing vessel	1893	Shark Bay	-24.5	113
Sea Queen	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Seagull	Sailing vessel	1893	Shark Bay area	-24.25	112
Shunsei Maru	Unknown	1931	Carbaddaman Passage, north of Point Cloates	-22.41666667	113.6833333
Sisters	Sailing vessel	1893	Shark Bay	-24.5	113
Smuggler	Sailing vessel	1893	Exmouth Gulf	-21.75	114.0833333
Star	Sailing vessel	1876	Shark Bay to Geraldton	-24.5	112
Star Of The North	Sailing vessel	1893	Shark Bay	-24.5	113
Stefano	Sailing vessel	1875	Point Cloates	-22.82688333	113.7211833
Stranger	Sailing vessel	1893	Shark Bay	-24.5	113
Strathmore	Sailing vessel	1870	Point Cloates	-22.55	113.5
Tanami	Sailing vessel		Trial Rocks	-20.28333	115.36666
Trial	Sailing vessel	1622	Trial Rocks	-20.28598333	115.3752333
Tropic Queen		1975		-20.43333333	115.5008333
Two Sons	Sailing vessel	1902	Shark Bay	-24.5	113
Unidentified Boat (2)	Unknown	1893	Shark Bay	-24.5	113
Unidentified Lugger	Unknown	1893	Exmouth Gulf	-21.75	114.0833333
Vergo	Sailing vessel	1893	Shark Bay area	-24.25	112
Veronica	Sailing vessel	1928	Sunday Island, Exmouth Gulf	-21.68333333	114.3833333
Vianen	Sailing vessel	1628	Barrow Island Area	-20	115.1666667
Vittoria	Unknown	1929	Dorre Island	-24.83333333	112.9333333
Wild Wave	Sailing vessel	1875	Exmouth Gulf	-21.75	114.0833333
Wild Wave (China)	Sailing vessel	1873	Monte Bello Island	-20	115.1666667
Wyndham	Sailing vessel	1910	Point Cloates	-22.55	113.5
Zvir	Twin screw steamer	1902	Point Cloates	-22.60916667	113.626

6.1.5.2 State

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Goodwyn Alpha (GWA) Facility Operations EP: State Historical Shipwrecks

Vessel name	Type of vessel	When Lost	Where Lost	Latitude	Longitude
Benan		1888/12/13	Point Cloates	22°44.491	113°40.47
Bertha	Cutter	1874/07/20	Reef off Point Cloates	22°33	113°30
Chofuku Maru	Steamer screw	5/02/1931	Point Cloates	22°31.053	113°39.779
Cock of the North	Ketch (Aux)	1879/05/07	20 km north of Geraldton	22°33	113°30
Correio da Azia	Ship	1816/11/25	Point Cloates	22°51.80598	113°45.04002
Curlew	Lugger	7/02/1911	At Onslow, Monte Bellos Group	20°00	115°10
Dampier		unknown	Enderby Island, Dampier Archipelago	20°31.4	116°14.2
Don Joseph	Lugger	1899/04/30	5-7 NM south of Point Cloates	22°37	113°36
Emlyn Castle		1960		21°47.0833	114°09.9
Emma	Schooner	1867/03	Coral Bay	23°04.953	113°44.010
Experimental shell pool	Other		North Delta Island, Monte Bello Islands	20°25.910546	115°32.605015
Fin	Steamship	15/01/1923	Point Cloates, Fraser Island	22°38.856	113°37.696
G.S.S.	Lugger	1883	Pt Cloates	22°33	113°30
Gem	Lugger	1893/03/25	North West Cape	21°37	113°59
Haw Kiet		2003		18°27.49	117°15.5
Iona	Barque	16/04/1923	Point Cloates, entering Black Rock Passage	22°48	113°38
Jane Bay One Unidentified		unknown	Jane Bay	22°43.93902	113°43.9272
Jane Bay Two Unidentified		unknown	Jane Bay, Point Cloates	22°44.27100	113°44.39898
Lady Ann	Ship (non-sail)	18/09/1982	24 miles north of NW Cape	21°24	114°12
Maratta		1905		20°43.67	115°25.567
Marietta		8/02/1905	Barrow Island	20°00	115°10
Marutta		1905		20°43.67	115°25.57
Mauds Landing		unknown		23°06.83664	113°46.52766
McCormack	Barge	1989/10/00	N.E. tip of Eaglehawk Island West of Dampier, Dampier Archipelago	20°08.200	115°57.200
McDermott Derrick Barge No 20	Barge	20/10/1989	N.E. tip of Eaglehawk Island, Dampier Archipelago	20°08.200	115°57.200
Mildura	Steamer	1166	North-West Cape	21°47.04552	114°10.0641
Occator	Brigantine	1856/02/09	Around 55 kilometres south of the Cape at Carbaddaman Passage	22°25	113°41
Parks Lugger		unknown	Hermite Island. Montebello Islands	20°28.62492	115°31.71108
Patience	Schooner	13/07/1930	Between Red Bluff and Cape Cuvier	24°00	113°12
Pelsart (Pelsaert)	Cutter	15/10/1908	12 miles Northwest of Imperieuse Reef, Rowley Shoals	17°34	118°35
Perentie		8/11/1976	Barrow Island	20°43.67	115°25.57
Perth	Steamship	1887/09/17	Point Cloates	22°41.548	113°38.536
Plym HMS	Warship	17808	Trimouille Island Island	20°24.208	115°33.950
Point Cloates Unidentified/ Ningaloo Reef Unidentified		unknown	North of Correio da Azia site	22°51.768	113°44.70402
Queen	Cutter	1892/01/25	Off Point Cloates	22°33	113°30
Raconteur ex-Nanango		1976	Bernier Island	24°47.22864	113°09.8424
Rapid	Ship	1811/01/07	Ningaloo Reef	22°44.36628	113°41.55858
S.S.S.		7/02/1901	Off Point Cloates	22°39.5	113°35
Shunsei Maru		5/02/1931	Carbaddaman Passage, north of Point Cloates	22°25	113°41

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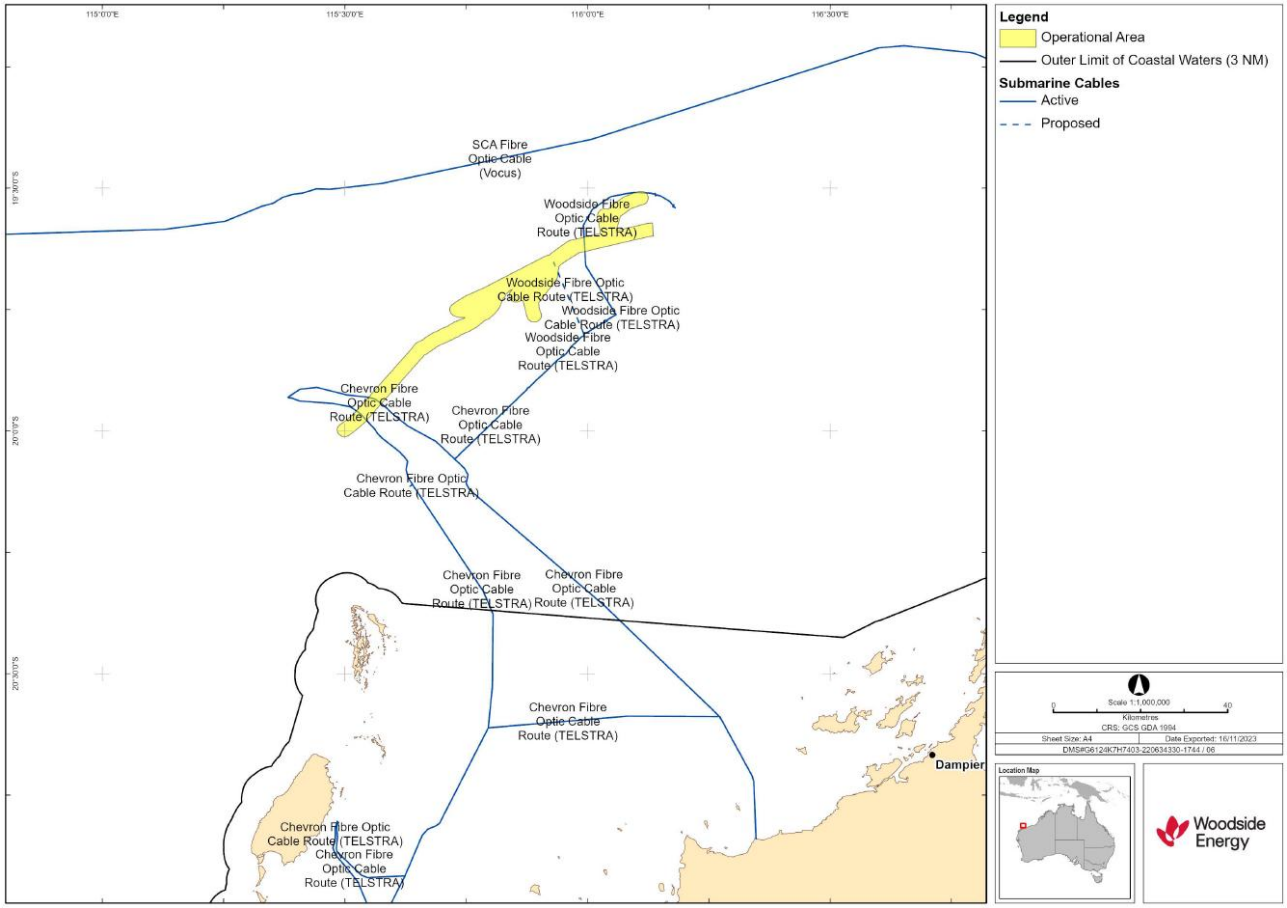
Stefano	Barque	1875/10/27	Point Cloates	22°49.613	113°43.271
Strathmore	Barque	1870	Point Cloates	22°33	113°30
Tantabiddi Lagoon Admiralty anchor			Tantabiddi Lagoon	21 54.843	113 57.779
Trial	Ship	1622/05/24	Trial Rocks	20°17.159	115°22.514
Tropic Queen		9/04/1975		20°26	115°30.05
Veronica	Lugger	1928/07	Sunday Island, Exmouth Gulf	21°41	114°23
Vianen	Ship	1628/01/25	Barrow Island Area	20°00	115°10
Wild Wave (China)	Brig	1873/08/30	Monte Bello Island	20°00	115°10
Wyndham	Schooner	26/01/1910	Point Cloates	22°33	113°30
Zvir	Steamship	27/11/1902	Point Cloates	22°36.55	113°37.56
Benan		1888/12/13	Point Cloates	22°44.491	113°40.47
Bertha	Cutter	1874/07/20	Reef off Point Cloates	22°33	113°30
Chofuku Maru	Steamer screw	5/02/1931	Point Cloates	22°31.053	113°39.779
Cock of the North	Ketch (Aux)	1879/05/07	20 km north of Geraldton	22°33	113°30
Correio da Azia	Ship	1816/11/25	Point Cloates	22°51.80598	113°45.04002
Curlew	Lugger	7/02/1911	At Onslow, Monte Bellos Group	20°00	115°10
Dampier		unknown	Enderby Island, Dampier Archipelago	20°31.4	116°14.2
Don Joseph	Lugger	1899/04/30	5-7 NM south of Point Cloates	22°37	113°36
Emlyn Castle		1960		21°47.0833	114°09.9
Emma	Schooner	1867/03	Coral Bay	23°04.953	113°44.010
Experimental shell pool	Other		North Delta Island, Monte Bello Islands	20°25.910546	115°32.605015
Fin	Steamship	15/01/1923	Point Cloates, Fraser Island	22°38.856	113°37.696
G.S.S.	Lugger	1883	Pt Cloates	22°33	113°30
Gem	Lugger	1893/03/25	North West Cape	21°37	113°59
Haw Kiet		2003		18°27.49	117°15.5
Iona	Barque	16/04/1923	Point Cloates, entering Black Rock Passage	22°48	113°38

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Jane Bay One Unidentified		unknown	Jane Bay	22°43.93902	113°43.9272
Jane Bay Two Unidentified		unknown	Jane Bay, Point Cloates	22°44.27100	113°44.39898
Lady Ann	Ship (non-sail)	18/09/1982	24 miles north of NW Cape	21°24	114°12
Maratta		1905		20°43.67	115°25.567
Marietta		8/02/1905	Barrow Island	20°00	115°10
Marutta		1905		20°43.67	115°25.57
Mauds Landing		unknown		23°06.83664	113°46.52766
McCormack	Barge	1989/10/00	N.E. tip of Eaglehawk Island West of Dampier, Dampier Archipelago	20°08.200	115°57.200
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Mildura	Steamer	1166	North-West Cape	21°47.04552	114°10.0641
Occator	Brigantine	1856/02/09	Around 55 kilometres south of the Cape at Carbaddaman Passage	22°25	113°41
Parks Lugger		unknown	Hermite Island. Montebello Islands	20°28.62492	115°31.71108
Patience	Schooner	13/07/1930	Between Red Bluff and Cape Cuvier	24°00	113°12
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Perentie		8/11/1976	Barrow Island	20°43.67	115°25.57
Perth	Steamship	1887/09/17	Point Cloates	22°41.548	113°38.536
Plym HMS	Warship	17808	Trimouille Island Island	20°24.208	115°33.950
Point Cloates Unidentified/ Ningaloo Reef Unidentified		unknown	North of Correio da Azia site	22°51.768	113°44.70402
Queen	Cutter	1892/01/25	Off Point Cloates	22°33	113°30
Raconteur ex-Nanango		1976	Bernier Island	24°47.22864	113°09.8424
Rapid	Ship	1811/01/07	Ningaloo Reef	22°44.36628	113°41.55858
S.S.S.		7/02/1901	Off Point Cloates	22°39.5	113°35
Shunsei Maru		5/02/1931	Carbaddaman Passage, north of Point Cloates	22°25	113°41
Stefano	Barque	1875/10/27	Point Cloates	22°49.613	113°43.271
Strathmore	Barque	1870	Point Cloates	22°33	113°30
Tantabiddi Lagoon Admiralty anchor			Tantabiddi Lagoon	21 54.843	113 57.779
Trial	Ship	1622/05/24	Trial Rocks	20°17.159	115°22.514
Tropic Queen		9/04/1975		20°26	115°30.05
Veronica	Lugger	1928/07	Sunday Island, Exmouth Gulf	21°41	114°23
Vianen	Ship	1628/01/25	Barrow Island Area	20°00	115°10
Wild Wave (China)	Brig	1873/08/30	Monte Bello Island	20°00	115°10
Wyndham	Schooner	26/01/1910	Point Cloates	22°33	113°30
Zvir	Steamship	27/11/1902	Point Cloates	22°36.55	113°37.56

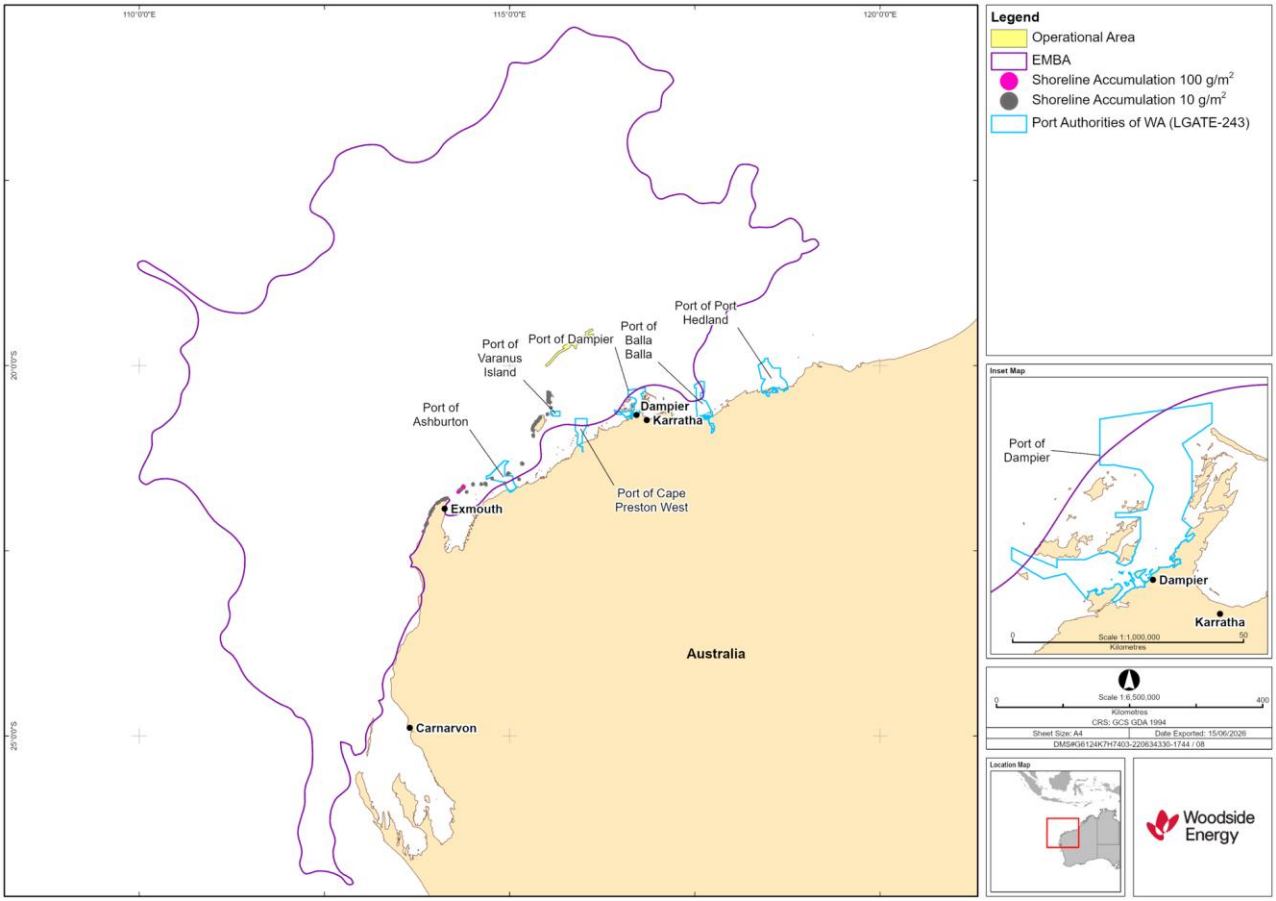
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6.1.6 Submarine communication cables map



6.1.7 Port boundaries map

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6.1.8 Email sent to Australian Border Force (ABF); Australian Maritime Safety Authority (AMSA) Marine Pollution; Department of Transport and Major Infrastructure (DTMI); Pilbara Ports; Clean Energy Regulator (CER); Ningaloo Coast World Heritage Advisory Committee (NCWHAC); Department of Mines, Petroleum and Exploration (DMPE); Department of Industry, Science and Resources (DISR); Marine Tourism WA; Recfishwest; WA Game Fishing Association; Beagle No 1; Bounty Oil & Gas; BP Developments Australia; Carbon CQ; Carnarvon Energy; Chevron Australia/MidOcean Gorgon/Osaka Gas Gorgon; Coastal Oil & Gas; Energy Resources; ExxonMobil Australia; Finder Energy; Hancock Energy; InCapture; INPEX Alpha; Jadestone; JERA Gorgon; JX Nippon O&G Exploration Australia; Longreach Capital; KATO Energy; KUFPEC; Kyushu Electric Wheatstone; Melbana Exploration; OMV Australia; OPIC Australia; Pathfinder Energy; Pelsart Resources; PE Wheatstone; Santos; SK Earthon; Shell Australia; Skye Resources; Tanami Energy; Vermilion Energy; Western Gas; Australian Energy Producers; Carnarvon Chamber of Commerce and Industry; Exmouth Chamber of Commerce and Industry; Karratha & Districts Chamber of Commerce and Industry; Exmouth Community Liaison Group; Karratha Community Liaison Group; City of Karratha; Shire of Carnarvon; Shire of Exmouth; Australian Conservation Foundation (ACF); Australian Marine Conservation Society (AMCS); Conservation Council of Western Australia (CCWA); Greenpeace Australia Pacific (GPAP); 350 Australia; The Wilderness Society; Doctors for the Environment/Doctors for the Environment WA; Friends of Australian Rock Art (FARA); Cape Conservation Group (CCG); Protect

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Ningaloo – 13 April 2026
Email sent to Department of Water and Environment Regulation (DWER) – 14 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.

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Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This

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means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and Woodside's response will be included in Woodside's EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards

Woodside Energy Feedback

6.1.9 Email sent to Department of Defence (DoD) – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

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Please also find attached a defence area map in the areas surrounding the Operational Area and EMBA.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure.

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	• Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and Woodside's response will be included in Woodside's EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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Regards

Woodside Energy Feedback

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6.1.10 Email sent to Australian Communications and Media Authority (ACMA); Telstra; Vocus – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Please also find attached a map of the submarine communication cables in the vicinity of the Operational Area. Based on the map, Woodside is consulting Telstra and Vocus for this EP.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).

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Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon

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release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and Woodside's response will be included in Woodside's EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Regards

Woodside Energy Feedback

6.1.11 Email sent to Australian Maritime Safety Authority (AMSA) – Navigation Safety; Australian Hydrographic Office (AHO) – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.

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- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Please also find attached a vessel density map and GIS shape files.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.

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Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line (IFL) and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Please note that Woodside will:

- Notify AHO no less than 4 weeks before operations commence where vessel activities are to be undertaken for more than three weeks at a time in the Operational Area.
- Notify AMSA's Response Centre (ARC) at least 24-48 hours before operations commence
    - For activities in the Operational Area <3 weeks; or
    - If activities occur in a shipping lane; or
    - Activities are undertaken in close proximity (within 1km) to a shipping lane.
- Provide updates to both the AHO and AMSA on any material changes to planned activities
- Ensure vessels exhibit appropriate lights and shapes to reflect the nature of operations and the obligation to comply with the International Rules for Preventing Collisions at Sea (COLREGS)
- Evaluate and implement adequate anti-collision measures including but not limited to additional warnings and/or lights to attract attention, and installation of Automatic Identification System (AIS) units.

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Feedback

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Your feedback and Woodside's response will be included in Woodside's EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards

6.1.12 Email sent to Australian Fisheries Management Authority (AFMA); Commonwealth Fisheries Association (CFA); Department of Agriculture, Fisheries and Forestry (DAFF) Fisheries – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line to the Karratha Gas Plant onshore.
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Consultation information

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Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure.

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	• Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Commonwealth fisheries

Commonwealth fisheries active in the Operational Area:

- None

Commonwealth fisheries active in the EMBA:

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery
- Western Tuna and Billfish Fishery

Notifications

Please let us know if you do not wish to receive start and end-of-activity notifications that may be issued under this EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards

6.1.13 Email sent to Tuna Australia, Australian Southern Bluefin Tuna Industry Association (ASBTIA); individual licence holders in the Western Tuna and Billfish Fishery, Western Deepwater Trawl Fishery, North West Slope Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning.

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	• Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

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[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

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Commonwealth fisheries

Commonwealth fisheries active in the Operational Area:

- None

Commonwealth fisheries active in the EMBA:

- North West Slope Trawl Fishery
- Western Deepwater Trawl Fishery
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Notifications

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6.1.14 Email sent to DAFF – Biosecurity – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
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Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040.

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	• Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

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Biosecurity

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With respect to the biosecurity matters, please note the following information below:

Environment description
The GWA Operational Area (which includes the GWA topsides, subsea components, interfiled line, and wells and reservoirs) is located in water depths of approximately 74 m - 200 m on the outer continental shelf. The bathymetry within the Operational Area is generally flat, which is consistent with the broader NWS Province shelf region. The seabed has a gentle (0.05°) seaward gradient extending to a steep distal slope occurring between 200 to 300 km offshore in water depths of around 200 m. The continental slope then descends more rapidly from the shelf edge to depths greater than 1,000 m to the north-west. Sediments in the Operational Area are broadly consistent with those in the NWS Province. Sediments in the outer NWS Province are relatively homogenous and are typically dominated by sands and a small portion of gravel. Fine sediment size classes (e.g. muds) increase with proximity to the shoreline and the shelf break but are less prominent in the intervening continental shelf. Carbonate sediments typically account for the bulk of sediment composition, with both biogenic and precipitated sediments present on the outer shelf (Dix et al. 2005). Beyond the shelf break, the proportion of fine sediments increases along the continental slope towards the Exmouth Plateau and the abyssal plain. While hard substrates are not known to occur within the Operational Area, they occur in the region more broadly and can host more diverse benthic communities. Hard substrate may be associated with the Ancient coastline at 125 m depth contour Key Ecological Feature (KEF). which overlaps the Operational Area. Rankin Bank is on the continental shelf, approximately 3 km from the Operational Area at the closest point and approximately 33 km away from the GWA platform. While not a KEF, Rankin Bank, along with Glomar Shoal, is the only large, complex bathymetrical feature on the outer western shelf of the West Pilbara and represents habitats that are likely to play an important role in the productivity of the Pilbara region. Rankin Bank consists of three submerged shoals delineated by the 50 m depth contour with water depths of approximately 18–30.5 m. Rankin Bank represents a diverse marine environment, predominantly composed of consolidated reef and algae habitat (~55% cover), followed by hard corals (~25% cover), unconsolidated sand/silt habitat (~16% cover), and benthic communities composed of macroalgae, soft corals, sponges and other invertebrates (~3% cover). Hard corals are a significant component of the benthic community of some parts of the bank, with abundance in the upper end of the range observed elsewhere on the submerged shoals and banks of NW Australia. Rankin Bank has been shown to support a diverse fish assemblage. This is consistent with studies showing a strong correlation between habitat diversity and fish assemblage species richness.

Potential IMS risk	IMS mitigation management
Unplanned introduction of invasive marine species (IMS)	• All vessels will manage their ballast water using one of the approved ballast water management options, as specified in the Australian Ballast Water Management Requirements. • Internationally sourced support vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements. • Woodside's IMS risk assessment process will be applied to the accommodation support vessel, vessels and relevant immersible equipment undertaking the Petroleum Activity. Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as treating internal systems) will be implemented to minimise the likelihood of IMS being introduced.

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Feedback

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Regards

6.1.15 Email sent to Director of National Parks (DNP) – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by 14 May 2026 using the details below. Woodside would also welcome the opportunity to meet with DNP to discuss the EP, should this be of interest.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Please also find attached GIS shape files.

Activity and location summary

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Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure.

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	• New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

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Australian Marine Parks (AMPs)

We note Australian Government Guidance on consultation activities and confirm that:

- Through review of hydrocarbon spill modelling, and with consideration of a 10 ppb dissolved threshold, the following AMPs may be contacted in the event of a spill:
    - The south-western end of the GWA Operational Area overlaps 3.22 km (0.9%) of the Montebello Australian Marine Park (Multiple Use Zone, IUCN: VI).
    - Dampier Marine Park (Habitat Protection Zone, IUCN: IV) is 113 km south east of the Operational Area.
    - Gascoyne Marine Park (Multiple Use Zone, IUCN VI) is 196.7 km south west of the Operational Area.
    - Argo-Rowley Terrace Marine Park (Multiple Use Zone, IUCN VI) is 196 km north of the Operational Area.
    - Ningaloo Marine Park (Recreational Use Zone, IUCN: IV) is 225.6 km south west of the Operational Area.
    - Shark Bay Marine Park (Multiple use Zone, IUCN: VI) is 535 km south west of the Operational Area.
    - Carnarvon Canyon Marine Park (Habitat Protection Zone, IUCN IV) is 560 km south west of the Operational Area.
- A Commonwealth Government-approved oil spill response plan will be in place for the duration of the activities, which will include notification to relevant agencies and organisations as to the nature and scale of the event, as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact the values of any AMP.

Woodside is aware of and will consider the *'Petroleum Activities and Australian Marine Parks'* guidance note developed and published jointly by DNP and NOPSEMA, while preparing this EP to ensure that the EP:

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- Identifies and manages all impacts and risks on AMP values (including ecosystem values) to an acceptable level and has considered all options to avoid or reduce them to as low as reasonably practicable (ALARP).
- Clearly demonstrates that the activities will not be inconsistent with the North-west Marine Parks Network Management Plan 2018.

If there is a change in activities which results in an overlap or new impact to a marine park Woodside will notify DNP.

Feedback

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6.1.16 Email sent to Department of Primary Industries and Regional Development (DPIRD) – 13 April 2026

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Activity and location summary

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Operational Area and exclusion zones	The Operational Area includes:

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	• The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
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State fisheries

State fisheries active in the Operational Area:

- Mackerel Managed Fishery (Area 2)
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Fish Trawl (Interim) Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery (Condition)
- Specimen Shell Managed Fishery

State fisheries active in the EMBA:

- Exmouth Gulf Prawn Managed Fishery
- Gascoyne Demersal Scalefish Managed Fishery
- Mackerel Managed Fishery (Area 2)
- Marine Aquarium Fish Managed Fishery

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- Nickol Bay Prawn Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Crab Managed Fishery
- Pilbara Fish Trawl (Interim) Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery (Condition)
- Western Australian Sea Cucumber Fishery
- Shark Bay Crab Managed Fishery
- Shark Bay Prawn Managed Fishery
- Shark Bay Scallop Managed Fishery
- Specimen Shell Managed Fishery
- West Coast Deep Sea Crustacean Managed Fishery
- West Coast Demersal Scalefish (Interim) Managed Fishery
- West Coast Rock Lobster Managed Fishery
- Exmouth Gulf Beach Seine and Mesh Net Managed Fishery
- Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions
- Pearling leases in the Montebello Islands and Dailey Shoal
- Aquaculture sites in the Mackerel Islands and Exmouth

Please note that Woodside has provided consultation information to the Western Australian Fishing Industry Council (WAFIC), Aquaculture Council of Western Australia (ACWA) and Recfishwest. Information provided to these bodies includes the planned timing and duration of the activities, and the spatial extent of the proposed activities (including any exclusion zones).

Woodside consults individual fishing licence holders based on WAFIC's guidance and advice, whereby WAFIC:

- directly consults fishery licence holders that are assessed as having a potential for interaction in the Operational Area
- consults fisheries that are assessed as having a potential for interaction in the EMBA only in the event of an unplanned emergency scenario.

Woodside also consults with relevant Traditional Owners in the preparation of this EP.

Spill Contingency Plans

Within Woodside's Oil Pollution First Strike Plan (FSP), Woodside commits to notifying Department of Transport and Major Infrastructure (DTMI) within 2 hours of becoming aware of a marine pollution incident that occurs in or may impact State waters. Woodside also consults DTMI in the development of the FSP.

Woodside commits to notify DPIRD within 24 hours of our reporting the incident to the appropriate authority. We have noted this contact as environment@dpird.wa.gov.au and placed this in the Notification section of the FSP.

In addition, within the FSP, Woodside commits to identify and notify additional relevant persons and organisations such as, but not limited to, commercial fishers or tourism operators that may be affected during a spill event. Woodside would, at the relevant time, engage with these parties as appropriate and will re-assess relevant persons and organisations throughout the response period.

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Woodside mitigates the risk of spill events through the adoption of a range of preventative controls (including engineering design) that all contribute to reducing the likelihood of a spill event to an unlikely level. The potential for hydrocarbons to reach coastal regions would be further minimised in the event of a spill by offshore response actions. Such responses would be aimed at reducing hydrocarbon contact with sensitive coastal areas, including commercially important fish species' spawning and aggregation areas.

Woodside's oil spill Operational and Scientific Monitoring (OSM) Program is executed under the Joint Industry OSM Framework (AEP, 2021). In the event of a spill, the OSM Framework will guide the situational awareness and response as well as undertake a suite of comprehensive science-based monitoring programs to evaluate environmental impacts. One such program is dedicated to the impacts on fisheries. The fisheries impact assessment has two objectives – to assess any physiological impacts to important fish and shellfish species and to assess targeted fish and shellfish species for hydrocarbon contamination.

Biosecurity

Woodside contracts vessels, which are used in a support capacity for transferring materials, equipment, and personnel in emergency scenarios from the facility. Vessels are also used for project field work such as subsea intervention (e.g. IMMR of subsea infrastructure), as described in the EP. Woodside works closely with contractors to ensure compliance with all requirements previously requested by DPIRD including DPIRD's policy that marine pests or disease are reported within 24 hours. A 24-hour notification will be formally captured as a notification within the EP and communicated to vessel operators.

All vessels are required to comply with the *Australian Biosecurity Act 2015*, specifically the Australian Ballast Water Management Requirements (as defined under the *Biosecurity Act 2015*) (aligned with the International Convention for the Control and Management of Ships' Ballast Water and Sediments) to prevent introducing invasive marine species (IMS). Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside's Invasive Marine Species Management Plan. Woodside's Invasive Marine Species Management Plan includes a risk assessment process that is applied to vessels undertaking activities. Based on the outcomes of each IMS risk assessment, management measures commensurate with the risk (such as the treatment of internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.

Notifications

Please let us know if you do not wish to receive start and end-of-activity notifications that may be issued under this EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.1.17 Email sent to Gascoyne Recreational Marine Users and Pilbara/Kimberley recreational marine users – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995.

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	• End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

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Your feedback and Woodside's response will be included in Woodside's EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.1.17.1 Letter sent to Gascoyne Recreational Marine Users and Pilbara/Kimberley Recreational Marine Users – 15 April 2026

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Please direct all responses/queries to:
Woodside Energy Feedback
t: +61 8 (1)800 442 977
e: feedback@woodside.com.au

15 April 2026

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

Dear Stakeholder

GOODWYN ALPHA FACILITY OPERATIONS ENVIRONMENT PLAN

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by 15 May 2026 using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is enclosed, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website at www.woodside.com/what-we-do/consultation-activities.

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Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
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Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
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[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

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Feedback

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Regards

Woodside Energy Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com
www.woodside.com

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6.1.18 Email sent to Western Australian Marine Science Institution (WAMSI); Commonwealth Scientific and Industrial Research Organisation (CSIRO); Australian Institute of Marine Science (AIMS); Edith Cowan University; Curtin University; Murdoch University; University of Western Australia – 13 April 2026

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The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by 14 May 2026 using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
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Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Woodside is seeking your advice regarding any research activities that your institution may be undertaking that may overlap with our proposed activities.

Activity and location summary

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are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

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Regards

6.1.19 Email sent to Western Australian Museum; Department of Climate Change, Energy, the Environment and Water (DCCEEW) – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

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Consultation information

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A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Please also find attached the details of Commonwealth and WA shipwrecks that are relevant for this EP.

Woodside refers to the *Underwater Cultural Heritage Act 2018 (Cwth)* and the Commonwealth Government's (2024) Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters: Guidelines on the application of the *Underwater Cultural Heritage Act* 2018.

Activity and location summary

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If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

Regards

6.1.20 Email sent to Department of Planning, Lands and Heritage (DPLH) – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Please also find attached the details of WA shipwrecks that are relevant for this EP.

Given the proximity of the proposed activities to Marine Parks, Woodside is consulting with the Department of Biodiversity, Conservation and Attractions (DBCA) for this EP. Woodside is also consulting with the Western Australian Museum and provided it with relevant shipwreck information for this EP.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities.

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	• Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

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Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Regards

6.1.21 Email sent to Shire of Ashburton – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.

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- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.

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Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Woodside is required to manage environmental impacts and risks to the EMBA by its proposed activities to As Low As Reasonably Practicable (ALARP) and to an acceptable level, as required by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations), through the implementation of the EP. Woodside will submit the proposed EP to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Preparedness and Response

In the course of developing the EP, Woodside will develop the oil spill preparedness and response position tailored to this activity including the drafting of the Oil Pollution First Strike Plan which details the potential impacts, notifications and response mitigations that may be executed to manage an emergency event. Woodside consults with the relevant jurisdictional authorities and controlling agencies, including the Western Australian Department of Transport and Major Infrastructure (DTMI), the Australian Maritime Safety Agency (AMSA) and, in some circumstances, relevant port authorities, during the plan drafting process to inform mitigation management measures in place for the proposed activities. Woodside may also consult with other relevant external emergency management agencies, including LEMC, to ensure emergency management plans are aligned with effective outcomes.

In addition to the jurisdictional authorities and controlling agencies, the plan includes standard emergency notifications to agencies including NOPSEMA, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), the Director of National Parks (DNP), and the WA Department of Biodiversity, Conservation and Attractions (DBCA). Where applicable, notification information for relevant Shires is also included in the Oil Pollution First Strike Plan.

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Cultural heritage

Woodside routinely utilises the Department of Planning, Land and Heritage Aboriginal Cultural Heritage Inquiry System as part of the EP development process and includes the results of these inquiry system searches as an appendix to each EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.1.22 Email sent to Chevron – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

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A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Please also find attached GIS shape file/s.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, MidOcean Gorgon and JERA Gorgon for feedback.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.

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Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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6.1.23 Email sent to Western Australian Fishing Industry Council (WAFIC) – 13 April 2026

Please see below consultation information for the Goodwyn Alpha (GWA) Facility Operations Environment Plan. The consultation period is due to close on **14 May 2026**.

A Consultation Information Sheet is also attached.

Under the fee-for-service agreement Option A, can WAFIC please provide the consultation information to the following fisheries based on active fishing (Fishcube data) in the Operational Area:

- Mackerel Managed Fishery (Area 2)
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Fish Trawl (Interim) Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery (Condition)
- Specimen Shell Managed Fishery

Draft email for WAFIC to send to Individual Licence Holders

Dear Licence Holders

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to WAFIC by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

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The table below provides a summary of the proposed activities under this EP. The attached Consultation Information Sheet provides further information including a map of impacted areas, summaries of potential impacts and risks relating to the proposed activities, and associated management measures, as well as our approach to consultation. This is also available on Woodside's website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes:

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	• The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line (IFL) and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Feedback

Please provide feedback specific to the proposed activities described to admin@wafic.org.au by **14 May 2026**.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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6.1.24 Email sent to Mackerel Managed Fishery (Area 2), Marine Aquarium Fish Managed Fishery, Onslow Prawn Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Trap Managed Fishery, Pilbara Line Fishery, Specimen Shell Managed Fishery individual licence holders (via WAFIC) – 20 April 2026

Dear Licence Holders

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

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The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to WAFIC by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

The table below provides a summary of the proposed activities under this EP. The attached Consultation Information Sheet provides further information including a map of impacted areas, summaries of potential impacts and risks relating to the proposed activities, and associated management measures, as well as our approach to consultation. This is also available on Woodside's website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.

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Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line (IFL) and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Feedback

Please provide feedback specific to the proposed activities described to admin@wafic.org.au by **14 May 2026**.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation.

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6.1.25 Email sent to Department of Biodiversity, Conservation and Attractions (DBCA) – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by 14 May 2026 using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].

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Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA

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are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Areas of ecological importance

The GWA Operational Area overlaps the Montebello Islands Marine Park (IUCN: II, IA, IV, VI).

Woodside maintains knowledge and an understanding of areas of ecological importance within and adjacent to the Operational Area. An information system to track current existing environment knowledge is regularly updated and covers the following topics:

- EPBC Act Matters of National Ecological Significance (MNES) including threatened and migratory listed species
- WA Biodiversity Conservation Act 2016 – threatened and priority fauna list, the Part 13 Instruments, i.e., threatened species recovery plans and Biodiversity Regulations 2018
- EPBC Act threatened Species, Recovery Plans and Conservation advice
- State protected areas information and management plans on the habitats and associated fish and benthic communities.

The sources of information include credible published scientific research, industry and research agencies (government and university) study reports including baseline and monitoring programs. Woodside is also committed to sharing knowledge and contributes to the Index of Marine Surveys for Assessment (IMSA) hosted by the Department of Water and Environmental Regulation (WA) and supported by WAMSI.

National Light Pollution Guidelines

The lighting associated with the Goodwyn Alpha Facility and activity vessels is required as a priority for safe operation. Woodside has considered the Commonwealth Department of Climate Change, Energy, the Environment and Water's National Light Pollution Guidelines for Wildlife (NLPG) (Commonwealth of Australia 2023) with respect to the facility and vessel activities. The assessment of potential impacts to seabird, marine turtles, and fish behaviour, is based on recommendations in the NLPG. Operational light emissions from the GWA facility and vessels represent a negligible disturbance to fauna within the Operational Area. This impact assessment determined that the impacts of lighting are as low as reasonably practicable (ALARP).

Operational and Scientific Monitoring Program

Woodside's oil spill Operational and Scientific Monitoring (OSM) Program, executed under the Joint Industry OSM Framework (AEP, 2021), provides for a quantitative assessment of the overall environmental impacts in the event of an unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors including but not limited to the Ningaloo Marine Park (M 2), Montebello Islands Marine Park (M 9) and the Barrow Island Nature Reserve (R 11648). The OSM comprises ten scientific monitoring programs (SMPs) and six operational monitoring programs (OMPs). The SMPs are targeted environmental monitoring programs to assess and quantify the environmental impact of a hydrocarbon spill range of physical-chemical (water and sediment) and biological (species and habitats) receptors, including EPBC Act listed species, environmental values associated with protected areas and socio-economic values, such as fisheries. The ten SMPs address a range of receptors most vulnerable to the impacts of a hydrocarbon release. The actual design and execution of the OSM program will be dependent on the nature and scale of the spill and the receptors predicted to be impacted. One of the priority focus areas in the early phase of an incident would be to identify and execute OSM at First Strike Monitoring Priorities.

Incidents and emergency response

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Woodside's Oil Pollution First Strike Plan for this activity includes a commitment that the DBCA will be notified via phone call as soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA DBCA. Woodside has incorporated the DBCA Pilbara regional office phone number as part of the notifications as listed in the Oil Pollution First Strike Plan.

This plan describes the incident management structure, notification and reporting requirements, the Operational Area, activity specific credible spill scenarios, and the hydrocarbon spill response strategies available for the protection of priority receptors. Links are included in the plan to a suite of existing Operational Plans and Tactical Response Plans (TRPs) to commence the mobilisation of response resources immediately, including 'monitor and evaluate' services, operational and scientific monitoring, and shoreline clean-up where required. Woodside understands that DBCA will not implement an oiled wildlife management response on behalf of a petroleum operator.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

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Regards

6.1.26 Email sent to Aquaculture Council of Western Australia (ACWA), Western Rock Lobster Council – 13 April 2026

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by **14 May 2026** using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line to the Karratha Gas Plant onshore.

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- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is attached, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website.

Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.

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Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m Petroleum Safety Zone (PSZ) of the platform. • The Interfield Line and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. The broadest extent of the EMBA takes into consideration planned activities and unplanned events. The EMBA has been developed combining numerous modelling outputs based on highly unlikely releases of hydrocarbons to the environment. The modelling scenarios that inform the EMBA are well loss of containment, subsea loss of containment, topsides loss of containment, loss of structural integrity, vessel loss of separation, and loss of control of suspended load from facility lifting operations.

The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA would not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

State fisheries

State fisheries active in the Operational Area:

- Mackerel Managed Fishery (Area 2)
- Marine Aquarium Fish Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Fish Trawl (Interim) Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery (Condition)
- Specimen Shell Managed Fishery

State fisheries active in the EMBA:

- Exmouth Gulf Prawn Managed Fishery
- Gascoyne Demersal Scalefish Managed Fishery
- Mackerel Managed Fishery (Area 2)
- Marine Aquarium Fish Managed Fishery

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- Nickol Bay Prawn Managed Fishery
- Onslow Prawn Managed Fishery
- Pilbara Crab Managed Fishery
- Pilbara Fish Trawl (Interim) Managed Fishery
- Pilbara Trap Managed Fishery
- Pilbara Line Fishery (Condition)
- Western Australian Sea Cucumber Fishery
- Shark Bay Crab Managed Fishery
- Shark Bay Prawn Managed Fishery
- Shark Bay Scallop Managed Fishery
- Specimen Shell Managed Fishery
- West Coast Deep Sea Crustacean Managed Fishery
- West Coast Demersal Scalefish (Interim) Managed Fishery
- West Coast Rock Lobster Managed Fishery
- Exmouth Gulf Beach Seine and Mesh Net Managed Fishery
- Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions
- Pearling leases in the Montebello Islands and Dailey Shoal
- Aquaculture sites in the Mackerel Islands and Exmouth

1. **Notifications**
2. Please let us know if you wish to receive start and end-of-activity notifications that may be issued under this EP.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**. Alternatively, Woodside is willing to consider and accept your feedback via a means which suits you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

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Regards

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6.1.27 Letter sent to individual Western Rock Lobster Council licence holders – 15 April 2026

Please direct all responses/queries to:
Woodside Energy Feedback
t: +61 8 (1)800 442 977
e: feedback@woodside.com.au

15 April 2026

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

Dear Stakeholder

GOODWYN ALPHA FACILITY OPERATIONS ENVIRONMENT PLAN

Woodside is preparing to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP). The GWA facility is located in Commonwealth waters approximately 138 km north-west of Dampier and 23 km south-west of the Woodside-operated North Rankin Complex.

The current GWA Facility Operations EP was accepted in January 2022. This revision incorporates updates including Greater Western Flank (GWF) infrastructure and associated activities.

If you would like to comment on the proposed activity, please provide feedback to Woodside by 15 May 2026 using the details below.

Overview

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Consultation information

A Consultation Information Sheet is enclosed, which provides further information on the proposed activities, including potential impacts and risks and associated management measures. The Consultation Information Sheet is also available on our website at www.woodside.com/what-we-do/consultation-activities.

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Activity and location summary

Goodwyn Alpha Facility Operations Environment Plan	
Activity details	Activities include: • Processing and production of dry gas and condensate. • Routine and non-routine inspection, monitoring, maintenance and repair (IMMR) activities. • Well clean-up and commissioning. • Platform well intervention, unloading, workovers and well kill activities. • Associated facility operations (e.g. lifting, bunkering, support vessel and helicopter operations).
Titles	Production licences: WA-1-L, WA-5-L, WA-6-L, WA-23-L, WA-24-L, WA-57-L[1]. Pipeline licences: WA-2-PL, WA-9-PL, WA-13-PL, WA-24-PL, WA-27-PL[2].
Location	The GWA platform is located in approximately 131 m of water, approximately 138 km north-west of Dampier and 23 km south-west of North Rankin Complex (NRC).
Water depth	Approximately 74 m to 200 m deep.
Timing	• Production commenced in 1995. • End of field life is anticipated between 2036 and 2040. • Decommissioning is not planned within the next five years.
Duration	• Operations occur 24 hours a day, 365 days a year. • IMMR activities occur as required.
Infrastructure	• GWA fixed platform, processing equipment, platform wells and utilities. • Subsea wells, manifolds, flowlines/pipelines, umbilicals and associated infrastructure.
Vessels	• Platform support vessels for logistics and operational support. • IMMR vessels (including subsea, accommodation and heavy lift vessels) as required. • Helicopters for personnel and freight transfer.
Operational Area and exclusion zones	The Operational Area includes: • The GWA platform and an area within a 500 m petroleum safety zone (PSZ). • The Interfield Line (IFL) and an area within 1500 m of the infrastructure. • Subsea infrastructure associated with offshore fields, and an area within 1500 m of that infrastructure. • New proposed subsea infrastructure and production wells, and an area within 1500 m of the infrastructure.
Communication with mariners	• Marine notices will be issued where vessel activities occur for more than three weeks outside the PSZ. • Other marine users may operate within the Operational Area but must not enter the PSZ.

[1] The Operational Area currently includes WA-7-R which is expected to be converted to a production licence.

[2] A new pipeline licence is required for the operation of the proposed GWF-4 flowline.

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Environment that May Be Affected (EMBA)

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The EMBA does not represent the extent of the predicted impact of a highly unlikely hydrocarbon release. Rather, the EMBA represents the merged area of many possible paths that a highly unlikely hydrocarbon release could travel, which depends on the weather and ocean conditions at the time of a release. This means that in the highly unlikely event that a hydrocarbon release does occur, the whole EMBA will not be affected. The specific and minimal part of the EMBA that is affected will only be known if there is a release.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form at www.woodside.com/what-we-do/consultation-activities by **15 May 2026.** Alternatively, Woodside is willing to consider and accept your feedback via a means which suit you.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the Environment Plan made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

NOPSEMA has published the brochure *Consultation on offshore petroleum environment plans – Information for the Community* to help community members understand consultation requirements for Commonwealth EPs and how to participate in consultation. You can access the brochure online through the QR code below.

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Regards

Woodside Energy Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com
www.woodside.com

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6.1.28 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (via legal representative) – 13 April 2026

We are contacting you as the delegated representative for Buurabalayji Thalanyji Aboriginal Corporation (BTAC), as well as the primary contact for the Thalanyji / Nhuwala People.

Woodside would like to consult with BTAC and the Thalanyji / Nhuwala People as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities

The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to BTAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

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Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA
The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au)

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to a consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for these EPs.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Cultural Values – Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Sea Country – connection to, access to and transfer of knowledge: • Enduring deep connection north of Onslow, extending out to Islands off the Pilbara coast including Montebello, Barrow and Mackerel Islands. • Cultural obligation to care for environment and values of Sea Country. • Resources including fish, shellfish, crabs, crustaceans, sea urchins, eggs, turtles, dugongs, flora and fauna associated with mangrove communities. • Artefacts and burials in coastal sand dunes. • Archaeological sites on Barrow and Montebello Islands. • Archaeological evidence of use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins. • Ceremonial sites (Thalu) for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.	x	x

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6.1.29 Email sent to Kariyarra Aboriginal Corporation (KAC) – 13 April 2026

Woodside would like to consult with KAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to KAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA
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Ongoing Feedback
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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

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Attachment A

KAC Cultural Values

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine Animals • Turtles: management of and sea turtle nesting. • Whales: connection to Songlines, impacts to whale migration. • Shellfish, cockles, oysters, clam shells, con shells. • Mullets (fish). • Sea cow (dugong).	x	
Sea Country • Cultural obligations to care for Country. • Secret habitat totems. • Access for fishing, trapping, crabbing, catching turtle, hunting dugong, using stingray barbs for spears, collecting shellfish and visiting offshore islands at low tide.	x	x
Yinta • Significant cultural/spiritual sites, often a water source but possibly other features such as hills. • Cultural rights to land determine who can use or speak for an area.	x	x
Marine species as resources • Marine mammals including sea cow (dugong). • Fish including mullets. • Molluscs including bivalves, gastropods and cephalopods. • Shellfish, cockles, oysters, clam shells, con shells.	x	
Coastal landforms	x	
Coastal vegetation	x	
Heritage sites associated with the coast and ocean including the presence of mythical snakes. • Traditional knowledge recalls that a saltwater serpent lives in the sea and brings fish to shore.	x	x
Transfer of knowledge to future generations • Impacts to resources: species reduction • Temporary exclusion to areas in the case of an oil spill etc.	x	
Islands off the coast of Port Hedland are significant • Little Turtle • North Turtle • Bedout	x	
Importance of river systems as food chains.	x	

6.1.30 Email sent to Malgana Aboriginal Corporation (Malgana) – 13 April 2026

Woodside would like to consult with Malgana as a relevant stakeholder that may be affected by the Goodwyn Alpha Facility Operations (the activity) Environment Plan (EP).

Consultation for this activity closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activity
- invite you to submit feedback for the activity
- provide an opportunity to discuss the activity
- discuss further ways to consult and engage for the activity.

Overview of the activity
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high-level overview of the activity, including the Environment that May Be Affected (EMBA) map. We have linked a Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activity could impact your cultural values, interests, and activities
2. Protection of the environment and its relationship to your cultural values
3. Your concerns about the proposed activity
4. Other elements we should consider in the EP
5. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to Malgana's cultural values that we consider relevant to this activity, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of this EP, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

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Kind regards

ATTACHMENT A:

Cultural Values – Malgana Aboriginal Corporation

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Interest in Shark Bay • Unique environment • Stromatolites and microbial mats • Seagrass	x	
Access to Country for resources • Bird and turtle eggs • Dugongs • Turtle • Fish including sharks • Shellfish • Crabs		x
Traditional knowledge of freshwater seeps in the submerged landscape.		x
Cultural significant species • Green sea turtles • Dugongs • Shags • Bottlenose dolphins		x
Knowledge: • Sharing and controlling of knowledge – knowledge owners must maintain control. • Transfer of knowledge to younger generations – older people pass on knowledge about Country to younger people.		x

6.1.31 Email sent to Murujuga Aboriginal Corporation (MAC) – 13 April 2026

Woodside would like to consult with MAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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Overview of the activities
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impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to MAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

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Attachment A

Cultural Values – Murujuga Aboriginal Corporation (MAC)

Cultural Value	Source	
	Consultation – identified during EP consultation	Literature review (publicly available)
The ecosystem and health of Mermaid Sound.		x
Marine species • Whales: totemic importance • Dolphins: cultural ceremonies • Dugongs: food source • Fish: cultural ceremonies • Sea Snakes: culturally important • Turtles: Songlines • Coral: attract fish and other species • Seagrass: provide protection for animals. Locations include Conzinc Island and between Angel and Gidley Islands. • Stingrays • Sharks • Crustaceans • Octopus • Sea stars • Sea urchins • Sponges • Molluscs	x	x
Marine eco-systems • Mangroves: would have provided shelter, crabbing, digging for shellfish and could be turtle nurseries. Locations include Conzinc Bay north end, Flying Foam Passage, Searipple Passage, North-East Bay of West Lewis Island. • Macroalgal (seaweed) communities: important habitats and food sources. • Subtidal soft bottom communities (ocean bottom): support invertebrate diversity. • Intertidal sand and mudflat communities: support invertebrate diversity and provide food for shorebirds. • Rocky shores: habitats for plants/animals and provide food for shorebirds.	x	x
Fish traps in Conzinc Bay and Angel and Gidley Islands.	x	x
Harvesting squid around Conzinc Bay		x

MAC is the appropriate cultural authority for Murujuga	x	
Submerged landscape: • Potential impact on Jinna (Songlines) • Potential impact to Aboriginal heritage, due to the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	x	
Murujuga seasonal calendar: • Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	x	

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6.1.32 Email sent to Nanda Aboriginal Corporation (Nanda) – 13 April 2026

Woodside would like to consult with Nanda Aboriginal Corporation (Nanda) as a relevant stakeholder that may be affected by the Goodwyn Alpha Facility Operations (the activity) Environment Plan (EP).

Consultation for this activity closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EP and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activity
- invite you to submit feedback for the activity
- provide an opportunity to discuss the activity
- discuss further ways to consult and engage for the activity.

Overview of the activity
The attached Summary Information Sheet has been developed for a First Nations audience and provides a high-level overview of the activity, including the Environment that May Be Affected (EMBA) map. We have linked a Consultation Information Sheet here with further details including an assessment of the potential impacts and risks relevant to the activity, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activity could impact your cultural values, interests, and activities
2. Protection of the environment and its relationship to your cultural values
3. Your concerns about the proposed activity
4. Other elements we should consider in the EP
5. Any other individuals, groups, or organisations we should talk to about this activity

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to Nanda's cultural values that we consider relevant to this activity, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of this EP, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about this activity. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA
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participate in consultation for Commonwealth EPs:

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Ongoing Feedback
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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

ATTACHMENT A:

Cultural Values – Nanda Aboriginal Corporation

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Connection to Country • Kalbarri Coastal Cliffs: Dreamtime, mythological/creation stories. • Archaeological sites. • Red sandstone outcrops. • Fresh water springs. • Artefacts abundant on islands adjacent to the state marine park.		x
Shorelines are culturally significant.	x	
Whales – migration patterns	x	
Abrolhos Islands and North Island • Artefacts • Historical significance	x	
White snow crabs • Food sources	x	

6.1.33 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) (via YMAC) – 13 April 2026

We are contacting you as the delegated representative for Yamatji Marlpa Aboriginal Corporation (YMAC), as well as the primary contact for the Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) and Nhuwala Claim Group.

Woodside would like to consult with YMAC, NTGAC and the Nhuwala Claim Group as a relevant stakeholder that may be affected by the:

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Consultation with Woodside
We'd like to gather your feedback about:

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2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
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5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to NTGAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Attachment A

Cultural Values - Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine ecosystems and species • Interest in invasive marine species • Interest in chemicals released into water – ballast water discharge • Marine parks – risks • Whales • Whale Sharks	x	

6.1.34 Email sent to Ngarluma Aboriginal Corporation (NAC) – 13 April 2026

Woodside would like to consult with NAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to NAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the framework agreement have been ongoing and

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appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Attachment A

Cultural Values – Ngarluma Aboriginal Corporation (NAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Onshore heritage: interest in management of heritage sites.	x	
Potential submerged heritage.	x	
Manggan - (creative beings) used supernatural force to shape the hills, rivers, seas and landforms.		x

6.1.35 Email sent to Nhuwala Claim Group (via YMAC) – 13 April 2026

We are contacting you as the delegated representative for Yamatji Marlpa Aboriginal Corporation (YMAC), as well as the primary contact for the Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) and Nhuwala Claim Group.

Woodside would like to consult with YMAC, NTGAC and the Nhuwala Claim Group as a relevant stakeholder that may be affected by the:

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4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to NTGAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA

The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

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- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback

Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Attachment A

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Cultural Values - Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine ecosystems and species • Interest in invasive marine species • Interest in chemicals released into water – ballast water discharge • Marine parks – risks • Whales • Whale Sharks	x	

6.1.36 Email sent to Nhuwala / Thalanyji People (via BTAC) – 13 April 2026

We are contacting you as the delegated representative for Buurabalayji Thalanyji Aboriginal Corporation (BTAC), as well as the primary contact for the Thalanyji / Nhuwala People.

Woodside would like to consult with BTAC and the Thalanyji / Nhuwala People as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to BTAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or

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additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to a consultation framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for these EPs.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

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Attachment A

Cultural Values – Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Sea Country – connection to, access to and transfer of knowledge: • Enduring deep connection north of Onslow, extending out to Islands off the Pilbara coast including Montebello, Barrow and Mackerel Islands. • Cultural obligation to care for environment and values of Sea Country. • Resources including fish, shellfish, crabs, crustaceans, sea urchins, eggs, turtles, dugongs, flora and fauna associated with mangrove communities. • Artefacts and burials in coastal sand dunes. • Archaeological sites on Barrow and Montebello Islands. • Archaeological evidence of use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins. • Ceremonial sites (Thalu) for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.	x	x

6.1.37 Email sent to Nyangumarta Warrarn Aboriginal Corporation (NWAC) – 13 April 2026

Woodside would like to consult with NWAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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Overview of the activities
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5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to NWAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

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Attachment A

Cultural Values – Nyangumarta Warrarn Aboriginal Corporation (NWAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Eighty Mile Beach has cultural and ecological value to the Nyangumarta Custodians.	x	
Resource collection • Impacts to migrating birds, whales, turtles and vegetation.	x	

6.1.38 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) – 13 April 2026

Woodside would like to consult with RRKAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to RRKAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Attachment A

Cultural Values - Robe River Kuruma Aboriginal Corporation (RRKAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Underwater heritage – concerns about impacts to heritage at shoreline.	x	
Coastline	x	

6.1.39 Email sent to Wanparta Aboriginal Corporation (Wanparta) – 13 April 2026

Woodside would like to consult with Wanparta as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

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Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

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We'd like to gather your feedback about:

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2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to Wanparta's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Attachment A

Cultural Values – Wanparta Aboriginal Corporation

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Sea Country • Spiritual connection • Cultural obligation to look after Sea Country • A healthy Sea Country leads to healthy marine life and healthy Ngarla People • Importance of fish stocks.	x	
Nearshore Islands (particularly Solitary Island/Jarrkunpungu) • Dreaming stories through the interconnecting islands • Dreamtime stories through the nearshore islands. • There is ethnohistorical evidence of Ngarla occupation on these islands.	x	
Sea (fresh and salt water) • Dreaming stories • A responsibility to look after the ocean (law and culture)	x	
Totemic species • Kestrel • Octopus • Spiny Brim • Sting Ray	x	

6.1.40 Email sent to Wong-Goo-Tt-Oo – 24 April 2026

We are contacting you as the delegated representative for the Wong-Goo-Tt-Oo people (Wong-Goo-Tt-Oo). Woodside would like to consult with Wong-Goo-Tt-Oo as a stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 25 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,

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- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
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Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information Murujuga Aboriginal Corporation (MAC) has already provided Woodside during previous consultation and also conducted reviews of available literature in relation to MAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 25 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

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as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

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Attachment A

Cultural Values – Murujuga Aboriginal Corporation (MAC)

Cultural Value	Source	
	Consultation – identified during EP consultation	Literature review (publicly available)
The ecosystem and health of Mermaid Sound.		x
Marine species • Whales: totemic importance • Dolphins: cultural ceremonies • Dugongs: food source • Fish: cultural ceremonies • Sea Snakes: culturally important • Turtles: Songlines • Coral: attract fish and other species • Seagrass: provide protection for animals. Locations include Conzinc Island and between Angel and Gidley Islands. • Stingrays • Sharks • Crustaceans • Octopus • Sea stars • Sea urchins • Sponges • Molluscs	x	x
Marine eco-systems • Mangroves: would have provided shelter, crabbing, digging for shellfish and could be turtle nurseries. Locations include Conzinc Bay north end, Flying Foam Passage, Searipple Passage, North-East Bay of West Lewis Island. • Macroalgal (seaweed) communities: important habitats and food sources. • Subtidal soft bottom communities (ocean bottom): support invertebrate diversity. • Intertidal sand and mudflat communities: support invertebrate diversity and provide food for shorebirds. • Rocky shores: habitats for plants/animals and provide food for shorebirds.	x	x
Fish traps in Conzinc Bay and Angel and Gidley Islands.	x	x
Harvesting squid around Conzinc Bay		x

MAC is the appropriate cultural authority for Murujuga	x	
Submerged landscape: • Potential impact on Jinna (Songlines) • Potential impact to Aboriginal heritage, due to the submerged coastline at initial occupation of the region, landscape features that would have defined the first travel routes used to move through Country.	x	
Murujuga seasonal calendar: • Any change to the feeding, breeding or migratory behaviour of culturally significant species would impact significantly on subsistence, cultural and ceremonial activities.	x	

6.1.41 Email sent to Wirrawandi Aboriginal Corporation (WAC) – 13 April 2026

Woodside would like to consult with WAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

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We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to WAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

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receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

Attachment A

Cultural Values – Wirrawandi Aboriginal Corporation (WAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Marine Species • Whales: migration and potential impact of noise on whale communication • Turtles: general interest around management and monitoring.	x	
Rock art: potential impact of emissions from activities.	x	
Underwater heritage: impacts particularly given recent finding of artefacts.	x	
Onshore heritage: management of sites.	x	

6.1.42 Email sent to Yindjibarndi Aboriginal Corporation (Yindjibarndi) (via NYFL) – 13 April 2026

We are contacting you as the delegated representative for Yindjibarndi Aboriginal Corporation and Ngarluma Yindjibarndi Foundation Ltd (NYFL).

Woodside would like to consult with NYFL and Yindjibarndi as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 21 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the Eps and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a

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high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA

The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

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6.1.43 Email sent to Yinggarda Aboriginal Corporation (YAC) – 13 April 2026

Woodside would like to consult with YAC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to YAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA
The following NOPSEMA publications may be of assistance to support understanding of the requirements to

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participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards
Attachment A

Cultural Values - Yinggarda Aboriginal Corporation (YAC)

Cultural Value	Source	
	Consultation	Literature review (publicly available)
Right and responsibility to speak and care for Country		x
Contemporary use of Country for cultural activities • Fishing including for Shark Bay mullet. • Camping • Hunting and gathering	x	x
Ecosystem health • Plants, animals and the environment are inexorably linked to culture. • Seagrass important food source for dugongs.	x	
Marine Mammals • Dugongs • Whales: potential impact to migration patterns and potential collisions with vessels. • Turtles	x	

6.1.44 Email sent to Kimberley Land Council (KLC) – 13 April 2026

Woodside would like to consult with KLC as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

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The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA

The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

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Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

6.1.45 Email sent to Yamatji Marlpa Aboriginal Corporation (YMAC) – 13 April 2026

We are contacting you as the delegated representative for Yamatji Marlpa Aboriginal Corporation (YMAC), as well as the primary contact for the Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) and Nhuwala Claim Group.

Woodside would like to consult with YMAC, NTGAC and the Nhuwala Claim Group as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

We have considered the information you have already provided Woodside during previous consultation and also conducted reviews of available literature in relation to NTGAC's cultural values that we consider relevant to these activities, which is outlined in Attachment A. Please get in touch with us if you would like more information or references regarding the values outlined in the document. If there are any changes or additional information you would like Woodside to consider in the preparation of these EPs, please let us know by Tuesday 12 May 2026.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about

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these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA

The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

- Brochure: Consultation on offshore petroleum environment plans brochure (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

6.1.46 Email sent to Ngarluma Yindjibarndi Foundation Ltd (NYFL) – 13 April 2026

We are contacting you as the delegated representative for Yindjibarndi Aboriginal Corporation and Ngarluma Yindjibarndi Foundation Ltd (NYFL).

Woodside would like to consult with NYFL and Yindjibarndi as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,

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- discuss further ways to consult and engage for the activities.

Overview of the activities

The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA
The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

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- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

We also acknowledge our discussions relating to the framework agreement have been ongoing and appreciate that these discussions will progress in parallel with consultation for this EP.

I look forward to your response and please feel free to call or send through guidance on next steps.

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Kind regards

6.1.47 Email sent to Save Our Songlines (SOS) (via legal representative) – 13 April 2026

Woodside would like to consult with SOS as a relevant stakeholder that may be affected by the:

- Goodwyn Alpha Facility Operations Environment Plan (EP).
- CK4 (Cossack-4H) and LH3 (Lambert-3) Well Intervention EP

Consultation for these activities closes on Tuesday 12 May 2026. Your feedback, opinions and comments provided by this date will be reflected in the EPs and considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

The purpose of this email is to:

- inform you about our plans for the activities,
- invite you to submit feedback for the activities,
- provide an opportunity to discuss the activities,
- discuss further ways to consult and engage for the activities.

Overview of the activities
The attached Summary Information Sheets have been developed for an Indigenous audience and provide a high-level overview of the activities, including the Environment that May Be Affected (EMBA) map. We have also linked Consultation Information Sheets here with further details including assessments of the potential impacts and risks relevant to these activities, as well as mitigation and management measures.

Consultation with Woodside
We'd like to gather your feedback about:

1. How the activities could impact your cultural values, interests, and activities.
2. Protection of the environment and its relationship to your cultural values.
3. Your concerns about the proposed activities.
4. Other elements we should consider in the EPs.
5. Any other individuals, groups, or organisations we should talk to about these activities.

Please let us know your preferred method of consultation including whether you would like to meet face to face. We welcome the opportunity to speak with Elders, office holders and other interested parties about these activities. Woodside provides various forms of assistance to organisations, Traditional Custodian groups and individuals to support participation in consultation.

Woodside manages gender-restricted or other culturally sensitive information carefully and will work with you to understand how you would like your information to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so by phoning (08) 6188 8700 or via email communications@nopsema.gov.au.

Information can be sent to IndigenousAffairs@woodside.com, via telephone on 1800 442 977 or directly to me.

Further information about NOPSEMA
The following NOPSEMA publications may be of assistance to support understanding of the requirements to participate in consultation for Commonwealth EPs:

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- Brochure: Consultation on offshore petroleum environment plans brochure (nopsema.gov.au)
- Guideline: Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au)
- Policy: Draft policy for managing gender-restricted information (nopsema.gov.au).

Ongoing Feedback
Feedback can continue to be provided during the life of the EPs, including after consultation for the EPs has closed, during EP assessment, and after the EPs has been accepted by NOPSEMA. Woodside continues to receive, assess and respond to claims and objections from relevant persons throughout the life of the EPs. Should a claim or objection be received following the acceptance of the EPs that Woodside assesses, and which identifies a measure or control that Woodside considers requires implementation or updates to meet the intended outcome of consultation, Woodside will apply its Management of Change and Review process as appropriate.

Please feel free to forward this email and the attached document to members, Traditional Owners and other people and organisations who may be interested.

I look forward to your response and please feel free to call or send through guidance on next steps.

Kind regards

6.2 Follow-up consultation

6.2.1 Email sent to Australian Border Force (ABF); Australian Maritime Safety Authority (AMSA) – Marine Pollution; Department of Transport and Major Infrastructure (DTMI); Ningaloo Coast World Heritage Advisory Committee (NCWHAC); Department of Mines, Petroleum and Exploration (DMPE); Department of Industry, Science and Resources (DISR); Marine Tourism WA; Recfishwest; WA Game Fishing Association; Beagle No 1; Bounty Oil & Gas; Carbon CQ; Carnarvon Energy; Chevron Australia/MidOcean Gorgon/Osaka Gas Gorgon; Coastal Oil & Gas; Energy Resources; ExxonMobil Australia; Finder Energy; Hancock Energy; INPEX Alpha; Jadestone; JERA Gorgon; JX Nippon O&G Exploration Australia; Longreach Capital; KATO Energy; KUFPEC; Kyushu Electric Wheatstone; Melbana Exploration; OMV Australia; OPIC Australia; Pelsart Resources; PE Wheatstone; SK Earthon; Shell Australia; Skye Resources; Tanami Energy; Vermilion Energy; Western Gas; Australian Energy Producers; Carnarvon Chamber of Commerce and Industry; Exmouth Chamber of Commerce and Industry; Karratha & Districts Chamber of Commerce and Industry; Exmouth Community Liaison Group; Karratha Community Liaison Group; City of Karratha; Shire of Carnarvon; Shire of Exmouth; Australian Conservation Foundation (ACF); Australian Marine Conservation Society (AMCS); Conservation Council of Western Australia (CCWA); Greenpeace Australia Pacific (GPAP); 350 Australia; The Wilderness Society; Doctors for the Environment/Doctors for the Environment WA; Friends of Australian Rock Art (FARA); Cape Conservation Group (CCG); Protect Ningaloo; AMSA – Navigation Safety; Department of Defence (DoD); Department of Planning, Lands and Heritage (DPLH); Western Australian Museum (WAM); Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity; Department of Climate Change, Energy, the Environment and Water (DCCEEW); Department of Biodiversity, Conservation and Attractions (DBCA); Department of Primary Industries and Regional Development (DPIRD); Australian Southern Bluefin Tuna Industry Association (ASBTIA); Commonwealth Fisheries Association (CFA); licence holders in the North West Slope Trawl Fishery, Western Deepwater Trawl

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Fishery, Western Tuna and Billfish Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery; Aquaculture Council of Western Australia (ACWA); Western Rock Lobster Council; Gascoyne Recreational Marine Users; Pilbara/Kimberley Recreational Marine Users; Shire of Ashburton; Telstra; Australian Institute of Marine Science (AIMS); Commonwealth Scientific and Industrial Research Organisation (CSIRO); Western Australian Marine Science Institution (WAMSI); Curtin University; Edith Cowan University; Murdoch University; University of Western Australia – 4 May 2026

Woodside previously consulted you on its plans to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations EP.

The GWA Facility Operations EP will cover:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Additional information on the EP is provided in the email below and in the Consultation Information Sheet, which is available on Woodside's website.

Feedback

If you have feedback specific to the proposed activities, we welcome your feedback via email at feedback@woodside.com, via phone call at 1800 442 977 or via the feedback form on our website by **14 May 2026**.

Your feedback and our response will be included in our EP, which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

You may request that particular information you provide during consultation not be published in the EP made available on the NOPSEMA website. Please let us know if you request that particular information not be published, and we will make your request known to NOPSEMA.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit our website.

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6.2.2 Letter sent to Gascoyne Recreational Marine Users; Pilbara/Kimberley Recreational Marine Users; individual licence holders in the Western Rock Lobster fishery – 4 May 2026

Please direct all responses/queries to:
Woodside Energy Feedback
t: +61 8 (1)800 442 977
e: feedback@woodside.com

Woodside Energy

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

4 May 2026

Dear Stakeholder,

Woodside previously consulted you on its plans to submit a five-year revision of the Goodwyn Alpha (GWA) Facility Operations EP.

The GWA Facility Operations EP covers:

- Continued operation of the GWA facility to receive, extract and process dry gas and condensate from offshore fields.
- Export of gas and condensate via the Interfield Line (IFL) to the Karratha Gas Plant onshore.
- Commissioning of up to seven new production wells associated with GWF developments.
- Vessel-based inspection, monitoring, maintenance and repair (IMMR) activities to support the facility and subsea infrastructure.

Further information on the proposed activities is provided in the Consultation Information Sheet which is available on Woodside's website **https://www.woodside.com/what-we-do/consultation-activities** or via the QR code below:

If you have feedback specific to the activities and the proposed EP, Woodside welcomes your feedback at **feedback@woodside.com** or via phone call at 1800 442 977 by **14 May 2026**.

Your feedback and our response will be included in our EP which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023* (Cth). Your feedback may also be used to support other regulatory processes associated with the planned activities (which may or may not be confidential).

Please let us know if you request that particular information that you provide in the consultation not be published. If so, we will make your request known to NOPSEMA.

Personal information collected in the course of consultation will be handled in accordance with Woodside's Environment Plan Privacy Collection Notice. To understand how personal information will be handled, please visit **www.woodside.com/what-we-do/consultation-activities**.

Regards

Woodside Energy Feedback

Woodside Energy
Woodside Energy
Mia Yellagonga
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6.3 Newspaper advertisements

6.3.1 The Australian – 13 April 2026

THE AUSTRALIAN MONDAY, APRIL 13, 2026

6 THE NATION

AUSE01Z50MA - V3

No Skye, an oddly shy NGA chief and controversy all over the walls





APY artists at the opening of the Ngura Pulka exhibition at the National Gallery, left and above; artist Yaritji Young, right; NGA director Nick Mitzevich with the Arts Minister's special envoy for the arts Susan Templeman, below





ROSEMARY NEILL

It was postponed for three years and is one of the most controversial exhibitions in the National Gallery of Australia's history.

Yet the launch on Saturday of Ngura Pulka (Epic Country) – an Indigenous landscape exhibition dogged by disputed allegations of white interference in black art – was a low-key "community" affair.

It featured a smoking ceremony and traditional songs performed by more than a dozen APY artists who flew to Canberra from remote South Australia – as well as a string of high-profile no-shows.

NGA director Nick Mitzevich declared "the National Gallery stands by all the (Indigenous) artists in the room ... by putting your work on display for the first time for the nation", but refused to speak to media or to have his photograph taken by The Australian's photographer.

The Governor-General, Sam Mostyn, sent her apologies, as did the member for Canberra, Alicia Payne.

APY Art Centre Collective CEO Skye O'Meara – the woman at the centre of the interference allegations – and high-profile APY artist and National Gallery council member Sally Scales – whose painting was withdrawn from the show – did not attend.

Tight-lipped publicists could not explain Scales' absence, while O'Meara's no-show was put down to a "scheduling clash".

Arts Minister Tony Burke sent his special envoy for the arts, Susan Templeman, who saluted the "incredible beauty" of the 30 landscapes in the exhibition and became emotional as she read from a statement by APY artist and art centre chair Sandra Pumani, who said: "We always knew we would get here ... we stand by these artworks as one."

The landscapes (not including the new works) in the exhibition were cleared by an NGA investigation that followed The Australian's months-long probe into South Australia's APY Art Centre Collective, the influential art centre behind the Ngura Pulka show.

The independent NGA investigation concluded all 28 paintings then bound for the Ngura Pulka



exhibition met the gallery's provenance standards. However, that inquiry excluded a video that was central to The Australian's investigation and appeared to show a white gallery assistant painting on a work by APY painter Yaritji Young, who has a different painting in the Ngura Pulka exhibition. Young was at the NGA on Saturday, but she and the other APY artists did not speak to the media.

The NGA investigators, Melbourne silk and copyright expert Colin Golvan and Sydney copyright lawyer Shane Simpson, said when it came to attribution, they regarded the word of the APY artists as being of "utmost importance". They excluded the video from their probe because the Young work depicted in it was not part of Ngura Pulka.

The Australian revealed on Friday four of the 28 cleared paintings, including one by National Gallery of Australia board member Scales, had been withdrawn from the exhibition, while six recently created works were added.

The NGA said Scales's painting was withdrawn from Ngura Pulka for governance reasons, following her reappointment to the National Gallery Council by Mr Burke.

The APYACC has issued defamation proceedings in relation to The Australian's reporting on the alleged scandal. They have consistently denied any wrongdoing and the proceedings are ongoing.

These proceedings are cited prominently in the exhibition catalogue, which also includes an essay by ABC First Nations journalist turned academic Daniel Browning, who attacks The Australian's coverage of the art saga and states: "I am always horrified when Aboriginal people become a news 'story'."

Browning also backs the approach of the experts who conducted the probe for the NGA, endorsing and paraphrasing their view that "If an artist asserts that they are the sole creator of this or that work, they should be believed".

Coober Pedy opal miner and artist George Cooley's painting, Blue Ground Country, is among the new paintings added to the show, and Cooley said in a speech that the APY artists affected by the saga "went through some hard times about three, 3½ years ago."

He thanked influential galleries, including the Art Gallery of South Australia and Art Gallery of NSW, who he said had "stood by us over the last three years" and revealed there were plans to tour Ngura Pulka internationally.

After the allegations reported by Walkley Award-winning former reporter for The Australian Greg Bearup, the APYACC was dumped from the Indigenous Art Code, the body that regulates First Nations art's ethical standards.

In the same year, the art collective was investigated by the SA, NT and federal governments.

Then NT arts minister Chansey Peach told The Australian this review found "substantial wrongdoing" in all nine areas it investigated, including claims of white interference in the making of Indigenous work, fraud and bullying. The findings were not made public and the matter was referred to the consumer watchdog, which found no breaches of consumer law.

The exhibition continues until August 23.

Goodwyn Alpha Facility Operations Environment Plan

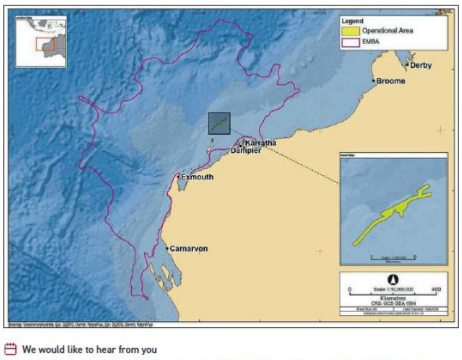
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Rapist's escape highlights new detention crisis

EXCLUSIVE

LACHLAN LEEMING
NSW POLITICAL CORRESPONDENT

The Albanese government had been warned of major security flaws in the country's immigration detention network less than a month before a convicted child rapist allegedly escaped in Sydney's west.

Michael Angok, 30, was arrested on Sunday afternoon following a multi-agency manhunt, after allegedly escaping from Bankstown Hospital, where he had been transported from Villawood Immigration Detention Centre for treatment on Wednesday.

The escape has raised new security concerns and questions over the management of the nation's detention centres, with a report by the commonwealth ombudsman – quietly released last month – warning of an increase in violent incidents and escapes as the network transitioned between operators.

The ombudsman was scathing of the 2025 handover from Serco to Secure Journeys, with the March report stating staff at centres were struck by burnout, adding poor management of the network of detention centres was evidenced by "the increase in incidents, escapes and the exacerbation of pre-existing issues during and after the transition period".

The report highlighted how there had been 12 escapes in the past year, before Angok fled last week.

The list of escapes included an instance where an immigration detainee stabbed two escorting officers with a makeshift weapon before fleeing, as he was being transported to the airport for removal in May last year.

The handover "distinctly lacked process and effective communication", and this led to concern about "increased risk and instability within the centres".

The report also claimed "hostility between outgoing and in-



Angok

coming providers" during the transition.

"Staff at multiple sites in differing roles raised concerns ... that outgoing staff were attempting to sabotage Secure Journeys," the report stated.

Serco rejected the claims in its response to the report.

Opposition home affairs spokesman Jonno Duniam claimed Labor was putting the community at risk due to failures in the immigration detention program.

"The alarm was raised, warnings were ignored, and now we've had a child rapist on the run," Senator Duniam said.

> 'The ombudsman could not have more clearly stressed the need for urgency'
>
> SENATOR JONNO DUNIAM
> OPPOSITION HOME AFFAIRS SPOKESMAN

"The ombudsman could not have more clearly stressed the need for urgency to control this spiralling issue.

"Home Affairs Minister Tony Burke must outline to Australians what he is going to do to rein this in. Silence is not going to cut it; the community deserves answers from this government who shirk their responsibilities when it comes to national security and immigration matters."

The criticism came as police arrested Angok on Sunday afternoon in Sydney's west.

NSW police confirmed officers from the Police Transport Command arrested the child rapist on the corner of Hartley Rd and Terminus Rd in Seven Hills.

Police will allege shoes belonging to the man where seen out the front of a home in the area, with police confirming investigations were continuing to see if he had been harboured.

Police said he was charged on an outstanding warrant and will face Blacktown Local Court on Monday.

Mr Burke's office referred inquiries about the ombudsman's report to the Home Affairs Department.

A departmental spokesman said that measures had been taken to improve immigration detention centre management, including recommendations suggested by the ombudsman such as the increased presence of Australian Border Force officers at centres.

"The department and the Australian Border Force have already implemented a range of actions, including measures specifically acknowledged by the ombudsman, such as an increased and sustained ABF onsite presence and enhanced compliance and audit activity across the detention network," he said.

"The department acknowledges the ombudsman's observation that further work is required and will continue to implement the report's recommendations, including reviewing lessons learned from this transition, strengthening future contract management, and working closely with the ombudsman and other oversight bodies to drive sustained improvement."

The Australian revealed last year the Home Affairs Department missed 17 of 82 performance targets it set for itself in 2024-25 financial year, with the department's annual report outlining a concerning increase in "critical incidents" involving immigrant detainees, including jumps in sexual assaults, escapes and riots.

Escapes more than doubled from three in 2023-24 to seven in 2024-25, while there have been at least 12 escapes in the past year.

Indigenous remains at Rottnest excavation

JACK NIVISON

Bones uncovered in the yard of a Catholic church on Rottnest Island have been revealed to be Indigenous remains, likely associated with the island's grim past as a detention centre for Aboriginal men and boys.

The remains were discovered on Wednesday morning as construction workers were upgrading a bus stop next to the Holy Trinity Church.

The discovery was referred to police by the on-site Noongar cultural heritage monitor.

Cultural heritage monitors are required to attend any sites on Rottnest Island, also known as Wadjemup, which involve digging or ground disturbance because of the area's historical significance.

Police arrived accompanied by a state anthropologist on Thursday, and forensic analysis resulted in the conclusion the bones were "historical in nature and consistent with Indigenous ancestry".

"WA police have liaised with the Whadjuk Aboriginal Corporation (WAC) and Rottnest Island Authority (RIA), who will assume ongoing management of the matter," police said.

In a joint statement, WAC and the RIA on Friday said all works at the bus stop had ceased until further notice, and expressed "sincere regret for the deep distress this incident has caused to Aboriginal people".

"RIA and WAC are working closely together to ensure all appropriate cultural protocols are followed, and that respectful, culturally informed decisions are made regarding the protection and ongoing management of the site," they said.

"RIA and WAC will continue to provide updates on this matter as further information becomes available."

While Rottnest Island is currently known for its easy-access tourism opportunities, friendly quokkas and beachside getaways, the island's history as a prison for Aboriginal men and boys is a source of great pain for the Whadjuk Noongar people.

According to WA state records, 3700 Aboriginal men and boys were imprisoned on the island between 1838 and 1931.

NEWSWIRE

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6.3.2 The West Australian – 13 April 2026

The West Australian
Monday, April 13, 2026

Five fight for life after horror crash

Five people are fighting for life after a multi-car and motorbike crash which left two people trapped inside their vehicles.

Emergency services were called to Tamborine Mountain Road in Mt Tamborine, Queensland, about 10.40am on Sunday after reports that two cars and a motorbike collided.

Police said one car was heading east on the road when it collided with the motorbike and another car driving in the opposite direction.

Multiple paramedic units and three rescue helicopters were called to the scene after reports that six people were injured and two had become trapped.

The motorcyclist, a man in his 50s, suffered "multi-system trauma" and was flown to the Gold Coast University Hospital with life-threatening injuries.

A man and a woman, both aged in their 70s, were transported to hospital via ambulance with life-threatening injuries. The man was initially trapped inside the car and had to be freed before being taken to hospital.

Another three men in their 20s, who were in another car, were also injured in the crash. Two have life-threatening injuries. A third man was trapped inside the vehicle and suffered facial injuries.

Tarmac set-up outrage

Anger grows over AFP's dodgy airport showboating



Former Australian soldier Ben Roberts Smith is arrested.

JOSEPH OLBRYCHT-PALMER

Federal police and war crimes investigators must face a public grilling in Canberra over the controversial airport arrest of war hero Ben Roberts-Smith unless they answer tough questions.

Shadow defence minister James Patterson said Australian Federal Police and the Office of the Special Investigator must "explain" why Australia's most decorated war hero was dragged off a plane in front of his partner and teenage daughters when he had already volunteered to surrender to authorities.

"I don't know what their considerations were, why they chose to arrest him at that time and that place, and it's up to them to explain why it was operationally necessary to do so," Senator Patterson said.

"Operational questions which must be answered by the Federal Police and the OSI."

The AFP even dispatched its own film crew to capture the moment that the Victoria Cross recipient was taken from Qantas flight at Sydney airport on Tuesday. It gave the vision to media outlets once Mr Roberts-Smith was charged with five counts of war crime.

The grandstanding inflamed many of the former SAS soldier's supporters including former prime minister Tony Abbott, and mining billionaire Gina Rinehart. There are also queries over whether sensitive details of the arrest were leaked, with the digital fingerprint of a Nine news story about the arrest showing the file had been created the day before.

Nine was first with the arrest the next morning and also published watermarked footage of Mr Roberts-Smith being marched from a plane by police. The evidence suggests Nine was on to the operation well before it happened.

Both the AFP and OSI have refused to answers questions about the leak. Senator Patterson said both would be grilled over the case in Federal Parliament.

"There will be an opportunity to ask questions of them in Senate estimates," he said. "But there's nothing stopping the AFP explaining that in the meantime, given that it's generated significant community concern . . . I think it is in the public interest for speculation like that to be put to bed."

There is also conjecture as to why he was arrested in Sydney and not Brisbane — with concerns the decision was made to ensure he faced a more diverse jury at trial.

Mr Roberts-Smith was charged with five counts of the war crime of murder, allegedly committed during his service in Afghanistan between 2009-2012. He has always denied the allegations.

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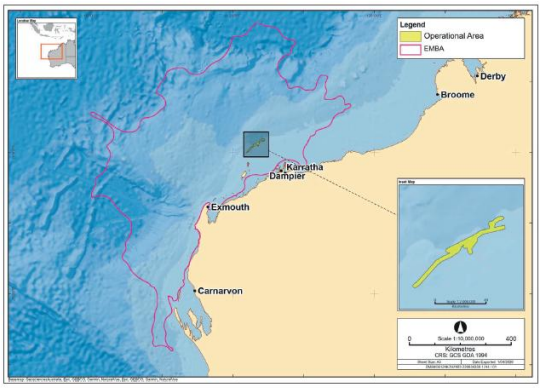
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6.3.3 Pilbara News – 15 April 2026

8 NEWS pilbaranews.com.au Pilbara NEWS Wednesday, April 15, 2026

Publican lived life to the full

OBITUARY

Russell Gordon McKay, a prominent figure in the Pilbara's hospitality industry — known to many as Russ, Rusty, or simply "Rusty Buoy" — lived a life that captured something of WA itself: adventurous, entrepreneurial and deeply connected to the people and places that shaped him.

Born in Perth on January 3, 1948, Russell was the eldest son of Max and Maud (nee Pash) McKay and an older brother to Phillip and Glenn. At five years old a backyard cricket accident cost him the sight in his left eye, but it did little to slow a boy already drawn to action and adventure.

School was never his great passion. After attending City Beach Primary School and Hale School, he moved to Leederville Technical College, though his interests were already shifting towards work and the wider world.

The family's first step into hospitality came with the Grosvenor Hotel in Perth, where Russell was introduced to pub life from the ground up — bagging bottles and learning the rhythms of the trade.

But the defining move came in 1965 when Max purchased the Victoria Hotel in Roebourne, relocating the family to the Pilbara at the beginning of the iron ore boom.

The region was transforming rapidly as new mining developments reshaped the North West, and the pubs were at the centre of social life. Russell worked wherever he was needed — as yardman, cellarman, cleaner and general dogsbody — while observing the business largely run by his mother.

Maud McKay, widely known simply as "Mrs Mac", was the organisational and financial backbone of the family enterprises.

Her insistence on fairness, attention to detail and strong business practices left a lasting impression on Russell.

Despite the family business, Russell's early ambition lay elsewhere. As a young man he dreamt of driving Mack trucks, and under the mentorship of heavy-machinery operator and local legend Merv "The Black Prince" Hunter, he learnt to operate graders and heavy plant while working on road construction. Before long he was driving trucks hauling fuel and freight, work he loved for the freedom it offered.

During this period he also worked as a lumper, loading cargo on to ships at a time when asbestos shipments moved through Pilbara ports.

Eventually the pull of family and opportunity drew him back into hospitality. In 1970 the McKay family opened the Wickham Hotel, built to service the new mining town. Alongside his mother, Russell helped run establishments that became legendary meeting places at a time when the Pilbara was booming with construction workers, miners pastoralists and travellers. At the height of the boom the Victoria Hotel was reputedly the highest beer-selling pub in WA.



Russell McKay

Away from the bar, Russell embraced the outdoor lifestyle. Fishing, diving and boating became lifelong passions. He also developed a love of motorsport, racing stock cars and super-modified vehicles at Roebourne speedway, where he became a two-time club champion and lap-record holder.

In 1970 he married Paula Dean, from Fremantle, who had answered an ad in the paper to be a waitress in Roebourne. Their daughter Kelly was born in 1972.

By the late 1970s the McKay family had broadened their business interests, operating two prawning trawlers out of Nickol Bay while also expanding into metropolitan hospitality with the purchase of the Range View Hotel in Eden Hill. As the focus of the business shifted south, Russell took on what would become the defining project of his career.

In 1985 the family purchased the Herdsman Hotel in Perth. Under Russell's leadership it evolved into one of the city's best-known live music venues during the late 1980s and early 1990s. The Herdy became a hub for touring bands and Australian pub-rock acts. During this era Russell was also the licensee for major outdoor events including the Bindoon Rock Festival, a hugely popular motorcycle and rock music gathering that became part of WA's counterculture history.

As the live-music pub era declined during the 1990s, Russell again demonstrated his adaptability. Recognising the shift towards family dining and community venues, he redeveloped the Herdsman site into the Herdsman Lake Tavern. The transformation proved highly successful, with the venue winning Perth pub of the year in 2002 and 2005.

Throughout the 1990s the McKay family also owned the Odin Tavern in Balcatta, with Russell closely overseeing its management while continuing to develop the Herdsman.

Beyond business, Russell was widely known for his friendships and personality. He had an extraordinary memory for people, stories and detail. A gifted storyteller, he could hold a room with tales from the Pilbara years or from his many adventures on the water and the road.

In 2000 Russell met Vivienne Allan, who became his partner for the remainder of his life. After selling the Herdsman in 2007 the couple moved permanently to Yallingup, a place Russell had loved since holidaying there from the early 1980s.

Retirement suited him well. His days were spent fishing, playing golf, tinkering in his shed and meticulously maintaining their property. Russell and Vivienne also spent several months each winter travelling Australia in their caravan, often drawn to remote roads and coastal camps.

He remained active well into his seventies, still fishing and golfing regularly until mid-2025 when increasing breathlessness led to medical investigations. On July 10, 2025, Russell was diagnosed with mesothelioma, a disease caused by asbestos exposure that can lie dormant for decades.

True to character he approached the diagnosis with pragmatism and humour, focusing less on himself than on ensuring those closest to him would be looked after. He died on January 10, aged 78.

He is survived by his partner Vivienne, daughter Kelly, brother Glenn and a wide circle of friends.

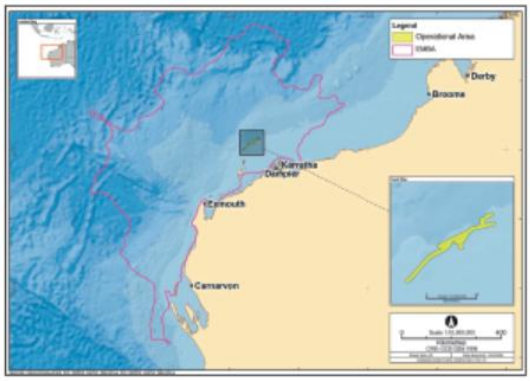
Kelly Peacock

Goodwyn Alpha Facility Operations Environment Plan

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6.3.4 Midwest Times – 15 April 2026

12 NEWS midwesttimes.com.au Times Wednesday, April 15, 2026

More help in Narelle aftermath

JOE SPAGNOLO

Tourism businesses still suffering from the aftermath of tropical cyclone Narelle can apply for payments of up to $20,000, the WA Government has announced.

Tourism Minister Reece Whitby travelled to Exmouth on Sunday to announce the $1.45 million tourism support package which will provide one-off payments of up to $10,000 to eligible businesses employing fewer than four workers and up to $20,000 for businesses employing four or more staff.

The Government will also release details of a scheme where vouchers offering 50 per cent off selected tours and experiences will be made available.

The vouchers will be supported by marketing campaigns encouraging visitors to explore and support the Coral Coast region.

"We know tourism businesses relying on the busy Easter period have been hit particularly hard, and these payments will help keep them afloat," Roger Cook said on Saturday.

"The message to tourists is clear: many businesses in the region remain open and are ready for business," the Premier said.

"I urge Western Australians to visit, support those businesses, and take advantage of the great offers available."

Exmouth was virtually cut off from the rest of WA after cyclone Narelle tore through the State's north last month.

Last week, Main Roads announced parts of Minilya-Exmouth Road were now open, allowing road trips from Perth to Exmouth via North West Coastal Highway and Burkett Road.

Tourism Council WA chief executive Evan Hall said Exmouth, Shark Bay, Kalbarri, Geraldton, Carnarvon, Coral Bay, Onslow and towns in the Kimberley were ready to welcome visitors.

In addition to the Premier's Relief Payment, payments of up to $20,000 for residents whose home has been severely damaged or destroyed are also being provided under the Premier's Natural Disaster Recovery Fund — and $10,000 for those who have suffered major damage. Funded by Lotterywest, applications for payments opened on Sunday.



Help will be extended to Nexus Airlines. Picture: Katya Minns

Capped regional air fares to remain

SIENNA SEYCHELL

State Government support will be given to airlines operating in regional WA to ensure fares under the Regional Airfare Zone Cap scheme are maintained despite increasing costs of jet fuel.

The help will also extend to airlines operating intra-regional routes, including Nexus Airlines' routes between Geraldton, Karratha, Port Hedland and Broome.

Under the recently revised scheme, regional airfares are capped at a maximum cost of $199 or $299 one-way for low demand flights and $265 or $385 for high demand flights, depending on how far from Perth the regional location is.

The State Government is also allowing larger road trains to travel closer to Perth along Great Northern Highway for a three-month trial to help reduce truck movements and get more goods to regional WA.

Under these changes, 53.5m triple-trailer road trains will be permitted to travel along Great Northern Highway between Wubin and Muchea with strict safety conditions for the vehicle, and drivers are required to have a minimum of three years experience driving vehicles of this length. These changes will help improve productivity and reduce truck movements along this key route connecting Perth to the Wheatbelt, Murchison, Goldfields, Pilbara and Kimberley.

Premier Roger Cook said: "Ensuring airfares remain capped at current prices for regional residents will provide real cost-of-living support for those who need it while allowing larger road trains along a key stretch of Great Northern Highway will help more goods reach regional WA faster. We will continue to work with the transport industry to support their operations and help maintain WA's supply chain resilience."

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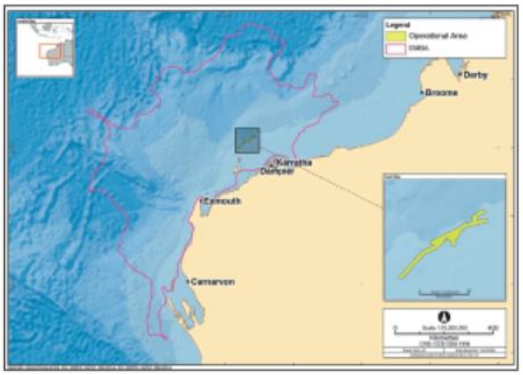
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6.3.5 Koori Mail – 22 April 2026

Employment

EXECUTIVE • PROFESSIONAL • POSITIONS VACANT

Education to employment for young women

FIRST Nations and Torres Strait Islander young women will gain new pathways from education to employment under a new national partnership between Kmart Group and the Stars Foundation.

Having already achieved Indigenous workforce participation of 4.5% across Kmart and Target which is in excess of population, the partnership expands Kmart Group's Indigenous Employment Program and supports young women to transition into meaningful work – strengthening the group's commitment to reconciliation, economic participation and culturally-safe workplaces for Aboriginal and Torres Strait Islander Australians.

The national partnership formalises an already established working relationship between the two organisations, spanning more than ten years. Many of Kmart Group's Deadly Stores work closely with local Stars Programs – particularly across Western Australia and the Northern Territory – creating local education-to-employment opportunities.

Building on that success, the newly established formal partnership will now scale nationally, to increase education-to-employment pathways for Indigenous young women and is already delivering results, with one Stars Program participant set to start a management role at Kmart in Western Australia this month.

Stars Foundation has supported more than 1,300+ alumnae since establishment in 2015 and is currently mentoring and empowering 4,300+ First Nations girls and young women across 80 programs in partner schools across Australia. Through our long-standing partnership, Kmart Group continues to support employment-focused initiatives with Stars, helping to create pathways from education into meaningful work.

"This partnership is about turning potential into real career opportunities for First Nations young women," said Tristram Gray, Chief People and Corporate Affairs Officer at Kmart Group.

"We've already seen what's possible at a local level – now we're working towards scaling that impact nationally, creating clear, supported pathways from school into long-term, meaningful work.

By working alongside Stars Foundation, we're aiming to provide the right support at the right time, so more young women can move confidently from education into employment."

Stars Foundation Founder and CEO, Andrea Goddard, said formalising this partnership with Kmart Group is an important step in scaling opportunities for First Nations young women nationally, ensuring transition into meaningful, long-term work.

"Experience shows that when First Nations young women are supported through school and into employment, the impact extends far beyond the individual – it strengthens families, communities and future generations," said Andrea Goddard.

"We commend Kmart Group on its leadership and commitment to joining Stars in its mission to improve education, health and employment outcomes for First Nations girls and young women."

Kmart Group and the Stars Foundation has begun delivering workshops through Stars Programs, while equipping store leaders to support First Nations young women and girls in their communities.



A group getting shown around a warehouse. *Picture: supplied.*

Goodwyn Alpha Facility Operations Environment Plan

Woodside has led the development of the LNG industry in Australia and today aims to thrive through the global energy transition. Woodside consults with relevant persons to gather feedback to inform its Commonwealth Environment Plans.

Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP)

Woodside plans to continue operating the GWA facility to receive and process gas and condensate from offshore fields. Gas and condensate will be exported via the Interfield Line to the Karratha Gas Plant onshore. The EP also covers commissioning of up to seven production wells, and vessel-based inspection, monitoring and maintenance activities.

Environment that May Be Affected (EMBA)

The EMBA is the largest geographic area where an unplanned event could potentially have an environmental consequence. In the highly unlikely event a hydrocarbon release does occur, the whole EMBA would not be affected.

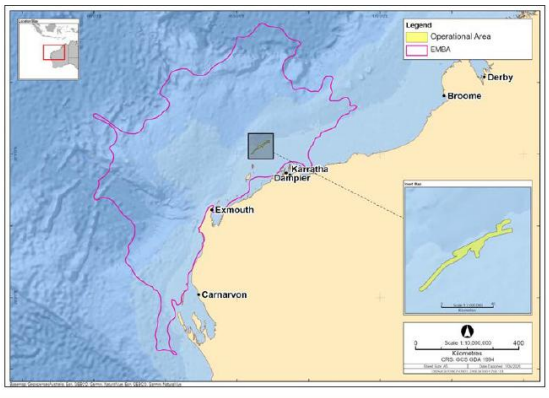
We would like to hear from you

If you are an individual, organisation or community group and believe your functions, interests or activities may be affected by the activities under this EP, we would like to hear from you by **14 May 2026.**

To find out more go to:

www.woodside.com/what-we-do/consultation-activities

You can also subscribe via our website to receive future information on upcoming activities.



feedback@woodside.com
Toll free: 1800 442 977
woodside.com

Woodside Energy

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6.3.6 National Indigenous Times – 28 April 2026

Country hearing rejected

CALLAN MORSE

An Aboriginal woman has been left shocked after a Hobart magistrate rejected an on-Country hearing last week.

Ruth Langford sought the approval of Chief Magistrate Catherine Geason on April 17 for part of a trespass hearing to be held on Aboriginal-owned land at Risdon Cove on Hobart's eastern shore. On April 20, the request was denied.

The request formed part of her defence after she was charged with trespass in two logging coupes last year.

In January 2025 the Yorta Yorta/Dja Dja Wurring woman was arrested at a logging coupe at Snow Hill on Tasmania's east coast before being arrested three months later during a forest protest in the Wellington Range, south of Hobart.

"I was shocked because Tasmania is the only State jurisdiction that chooses not to have on-Country hearings," Ms Langford told National Indigenous Times. "I actually naively had not prepared my response in depth for a rejection. I couldn't fathom how she could say no, given under her act, very clearly, she has the capacity and the power."

Ms Langford's actions are rooted in her cultural obligation to protect Country.

She says Tasmania's forest industry is having a devastating effect on the State's waterways while increasing the risk of "catastrophic" bushfires.

"The current practices, including massacring whole cultural landscapes, have no real benefit to the public," she said. "We have seen for the last decade, report after report ... calling for an immediate end for logging old-growth forest."

"The mismanagement is not only the slaughtering of these once vibrant, rich and healthy ecologies, but we're also seeing a bleed on the public purse."

Ms Langford said Tasmania's forests have immense ecological and environmental value.

"They help protect us from wildfires. They help create healthy waterways, and they retain carbon," she said.

"But most importantly, for our people, those forests are our kin," she said. "They teach us our relational obligations and how to live in healthy ways and healthy societies."

Ms Langford, who is self-representing in court, said she provided all the precedents of on-Country hearings to Ms Geason, which have been held across the country. "We had said very clearly ... this case represented an understanding of my obligation to Country, and in order for her to make a fully informed decision, then she needs to come to Country," Ms Langford said.

Calling the decision "just another day in the colony", Ms Langford said her cause "did not lose anything" from the magistrate's decision.

"But it was a tragic loss for Tasmanian society to see ethical and moral leadership towards healing the injustices and finding a better way to relate to Earth, honouring culture and traditions."



Ruth Langford outside Hobart Magistrates Court. Picture: AAP

Kids put at risk as funds cut

JOSEPH GUENZLER

The Queensland Government's decision to withdraw funding from Murri Watch's youth cultural support program this month has drawn criticism from Aboriginal and Torres Strait Islander Social Justice Commissioner Katie Kiss, who says it will place children at greater risk in police watch houses.

The program supports Aboriginal and Torres Strait Islander children and young people held in Queensland watch houses, helping ensure detainees' hygiene, food and medical needs are met while in detention.

It is to end on June 30 after the State Government chose not to renew its funding contract. Ms Kiss, a Kaanju and Birri/Widi woman, said the loss exposed a wider failure to invest in prevention and early intervention for First Nations children.

"The Queensland Government's decision to withdraw funding from Murri Watch's Youth Cultural Support in Watch Houses program puts Aboriginal and Torres Strait Islander children at greater risk at the very moment they need protection most," Ms Kiss said.

"It also highlights a deeper failure to invest in what actually keeps them safe: prevention and early intervention."

Goodwyn Alpha Facility Operations Environment Plan

Woodside has led the development of the LNG industry in Australia and today aims to thrive through the global energy transition. Woodside consults with relevant persons to gather feedback to inform its Commonwealth Environment Plans.

Goodwyn Alpha (GWA) Facility Operations Environment Plan (EP)

Woodside plans to continue operating the GWA facility to receive and process gas and condensate from offshore fields. Gas and condensate will be exported via the Interfield Line to the Karratha Gas Plant onshore. The EP also covers commissioning of up to seven production wells, and vessel-based inspection, monitoring and maintenance activities.

Environment that May Be Affected (EMBA)

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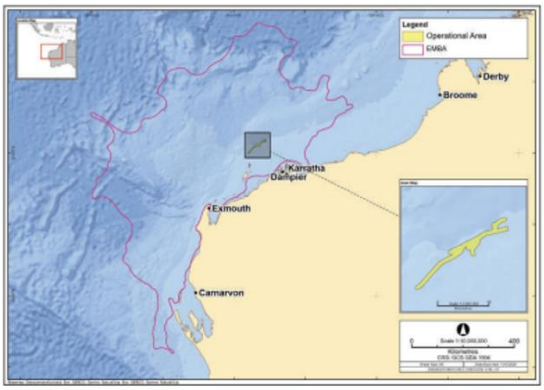
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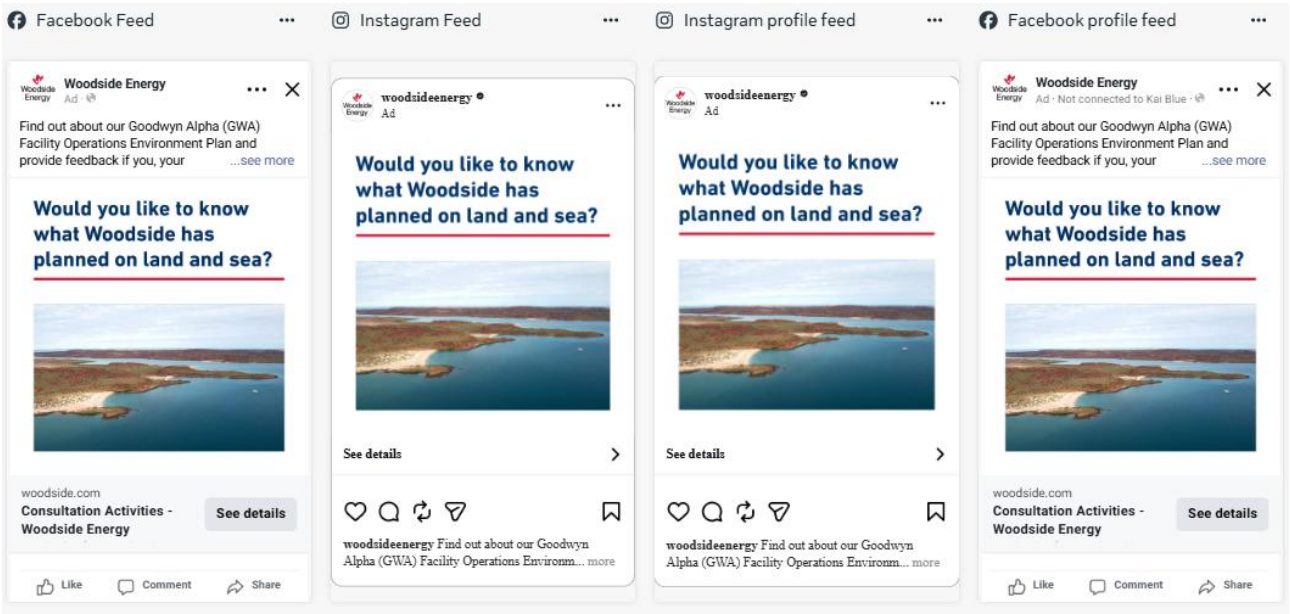
Woodside Energy

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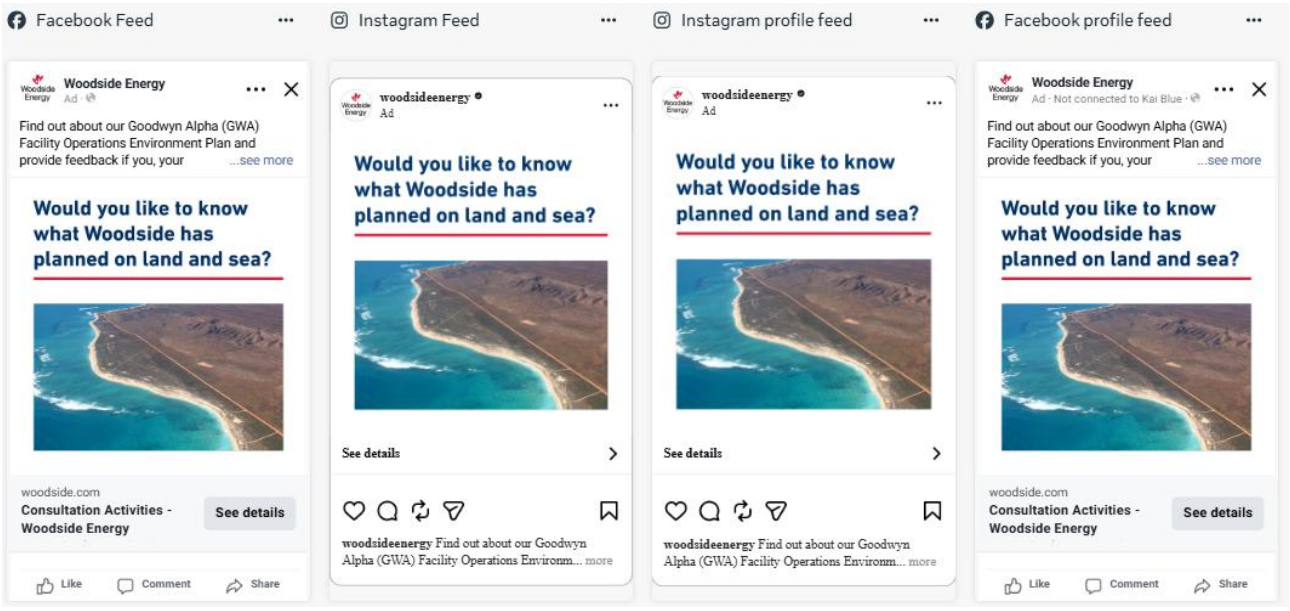
6.4 Social media

6.4.1 Social media EP targeted campaign

Tile design 1

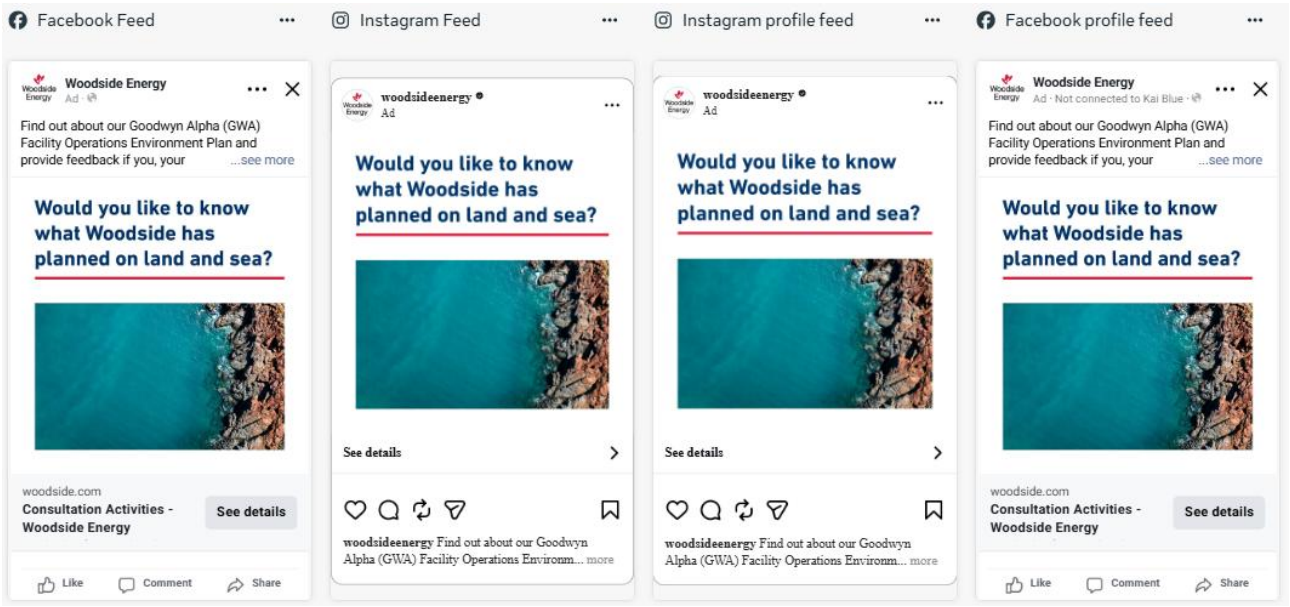


Tile design 2



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Tile design 3



6.5 Community information sessions

The community information sessions that Woodside has conducted are captured below:

6.5.1 Pilbara Region

6.5.1.1 KDCCI Red Earth Arts Festival (REAF) Markets – 15 May 2026

	Location: Karratha
Activity	Red Earth Arts Festival (REAF) Markets
Date	Friday, 15 May 2026
Description of the consultation	Woodside hosted a stand at the Karratha District Chamber of Commerce (KDCCI) Red Earth Arts Festival (REAF) markets, a community event bringing together local businesses selling local products, a variety of food vendors and community groups. The stand was staffed by members of Woodside's Corporate Affairs team. Woodside displayed a QR code at the stand linking to the 'Consultation activities' page of the Woodside website. Woodside displayed and made available printed Consultation Information Sheets on the GWA Facility Operations EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • An advertisement published in the Pilbara News on 13 May 2026 (see below). • A social media post via Woodside North West Facebook account advising that Woodside would be in attendance at the event (see below). • An advertisement displayed on community noticeboards including Karratha City Plaza (see below). • An EP consultation display with QR code (linked to the 'Consultation activities' page on Woodside's website) displayed at Woodside's stand.

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	• EP consultation banner with QR code (linked to 'Consultation activities' page on Woodside website), displayed at Woodside's stand along with current EP consultation information sheets (see table below)
Estimated number of individuals / organisations consulted	More than 500 community members attended the event. Woodside spoke to many community members, recording more than 5 conversations.
Summary of Feedback, Objection or Claim	
• Queries around employment opportunities. • General interest in Woodside's supply of DOMGAS to WA. • General interest in updates to Woodside's proposed Browse to North West Shelf Project. • Environment Plan community consultation and approval process discussed and why we want to talk to community. No concerns raised. • Discussions with children about what Woodside does and where gas comes from. • Pleasant interactions with Woodside, Woodside contractor company and near neighbour employees.	
Woodside's Assessment of Merits of Feedback, Objection or Claim and its Response	
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of the EP).	

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Evidence of promotion and event

Advertisement Pilbara News – 15 May 2026	Social media Dampier Beachside Markets Facebook post – 17 October 2025



Pilbara News Wednesday, May 13, 2026 — pilbaranews.com.au — NEWS 3

Cheaper air fares a lift for tourism

PHOEBE SOLON

Subsidised one-way fares between Perth and the Pilbara, starting at $198, have been announced as efforts continue to support the North West tourism industry after the devastation wrought by cyclone Narelle.

The State Government announced on May 6 that it would renew its "affordable airfares program" for 2026, with travellers able to access the cheap fares to Exmouth through Qantas.

The initiative also covers Broome and Kununurra with Tourism Minister Reece Whitby saying the program was a key part of supporting regional WA.

"Many WA businesses remain ready to welcome visitors after cyclone Narelle, and we encourage people to continue to travel and support local businesses," he said.

"The affordable airfares program delivers significant savings for travellers, which can be reinvested locally, helping grow tourism and jobs in this state's most beautiful and remote areas."

Exmouth shire president Matt Nikkikuk said the return of the program was good news for the Exmouth community and for visitors, as the town continues to rebuild momentum after cyclone Narelle.

"We are very much open for business, and more accessible travel options to our remote region mean stronger support for cyclone-impacted local businesses and operators," he said.

"There is no better time to book and plan ahead to enjoy what this extraordinary place has to offer."

Transport Minister Rita Saffioti highlighted the importance of keeping regional tourism accessible.

"This program is about making it more affordable for people to visit our regions and support local jobs," she said.

The Government said the program had a strong track record, selling nearly 178,000 fares since 2016, including more than 20,000 last year for flights connecting Perth with Broome, Kununurra, and Exmouth.

The program complements other recovery efforts, including a $1.45 million tourism business support package.

BOWLED OVER BY GENEROSITY

Mineral Resources port operations manager Paul Wheeler, far right, with the bowls competition winners.

LAURA NEWELL

Onslow bowls enthusiasts will enjoy newer balls, better jokes and colder drinks thanks to a donation from Mineral Resources.

The Onslow Sports Club has bought 10 new sets of lawn bowls, kitchen equipment, including pie warmer and air fryer, to improve food service capacity, a new projector and three-door bar fridge with cash from Minifer community grants program.

The firm also supports the club's annual barefoot bowls competition, providing a $300 shop Ashburton voucher to the winning team each month. The competition was launched with a free community event on May 1.

With more than 190 members, Onslow Sports Club president Tara Coluta said they brought people together through sport, hospitality and a welcoming atmosphere.

"Minifer support has been fantastic for the club. It's not just about the equipment – it's the ongoing partnership and commitment to our events that's helping make the club more active, successful and a place the whole community can enjoy," she said.

Minifer port operations manager Paul Wheeler, who relocated to Onslow with his family to work on the Onslow Iron project, said the upgrades helped maintain the club's welcoming spirit.

"As someone who lives in Onslow and regularly uses the sports club, it's great to see the positive impact our support is having," he said.

The initiative also covers Broome and Kununurra with Tourism Minister Reece Whitby saying the program was a key part of supporting regional WA.

"Many WA businesses remain ready to welcome visitors after cyclone Narelle, and we encourage people to continue to travel and support local businesses," he said.

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The program complements other recovery efforts, including a $1.45 million tourism business support package.

Provide your feedback on our Environment Plans

Are you interested in Woodside's proposed activities and operations?

Let's chat at the KDCCI Markets at REAF from 3 pm – 8pm on Friday, 15 May 2026.

If you are an individual, organisation or community group whose functions, interests or activities may be affected by our proposed activities and operations, we want to talk to you.

Find out more or provide feedback:
Phone: 1800 442 977
Email: feedback@woodside.com

Woodside Energy

Pluto LNG Facility update

As operator of the Pluto LNG Facility, Woodside's priority is safe and reliable operations.

Woodside advises it is undertaking planned maintenance at the Pluto LNG Facility, which may result in increased flaring with the potential for dark smoke during some of the maintenance period.

Flaring is essential for the safe operation of a gas plant and is required during some maintenance activities.

Woodside closely monitors and aims to minimise its flaring as part of normal operations.

If you would like further information on these activities, scan the QR code below or call Woodside's Community Line on 1800 634 969.

Woodside Energy

Woodside North West
2d ·

Red Earth Arts Festival's Harmony and HeART is in full swing at The Quarter.

Our friendly team are at the KDCCI Markets from 3pm to 8pm. Let's talk about Woodside's work in the north west, our Environment Plans, current and proposed projects, and share your feedback with the team.

If you would like to know more about our activities on land and sea, we will also be consulting relevant persons in the course of preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse effects of the proposed activity on the environment.

We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.

View the full REAF program here: https://bit.ly/433WsCx See less



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Advertisement: **Community noticeboard**	**Advertisement:** **Community noticeboard**
	

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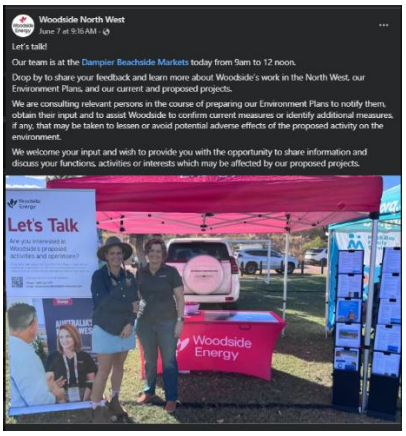
6.5.1.2 Dampier Beachside Markets – 7 June 2026

Location	Dampier
Activity	Dampier Beachside Markets
Date	7 June 2026
Description of the consultation	Woodside hosted a stand at the Dampier Beachside Markets, a community event bringing together local businesses selling local products, a variety of food vendors and community groups. The stand was staffed by members of Woodside's Corporate Affairs team. Woodside displayed a QR code at the stand linking to the 'Consultation activities' page of the Woodside website. Woodside displayed and made available printed Consultation Information Sheets on the GWA Facility Operations EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: • An advertisement published in the Pilbara News on 3 June 2026. • A social media post via Woodside North West Facebook account advising that Woodside would be in attendance at the event on 7 June 2026 • A social media post via Dampier Beachside Markets - DCA Facebook account advising that Woodside would be in attendance at the event on 4 June 2026 • An advertisement displayed on community noticeboards at Lo's Karratha on 26 May 2026 • An advertisement displayed on community noticeboards at Lo's Karratha, and IGA Good Grocer Karratha on 26 May 2026 • An EP consultation display with QR code (linked to the 'Consultation activities' page on Woodside's website) displayed at Woodside's stand. • EP consultation banner with QR code (linked to 'Consultation activities' page on Woodside website), displayed at Woodside's stand along with current EP consultation information sheets (see table below)
Estimated number of individuals consulted	More than 1000 community members attended the event. Woodside spoke to many community members, recording 20 conversations.
Summary of Feedback, Objection or Claim	
• Queries around employment opportunities. • Discussion around flaring, why Woodside flares, informing community about upcoming flaring activity. no concerns raised - neutral sentiment. • General interest in the Scarborough Energy Project progress and Pluto Train 2 and Train 1 modifications projects. • General interest from Woodside employees around the Browse to NWS project. • General interest in Bass Straight activities. • Patrons shared their views on future of gas in the energy transition. • Environment Plan community consultation and approval process discussed and why we want to talk to community. No concerns raised. • Discussions with children about what Woodside does and where gas comes from. • Pleasant interactions with Woodside, Woodside contractor companies and near neighbour employees.	

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Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response
Whilst feedback was received, there were no objections or claims. The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2 of this EP).

Evidence of promotion and event

Advertisement **Pilbara News – 3 June 2026**	**Advertisement** **Karratha City Plaza Notice Board**
 6 NEWS A showcase of spirit, strength & optimism Provide your feedback on our Environment Plans Lions: Global service, local health impact	 KCP KARRATHA CITY PLAZA Community notice board WA DAY ROEBOURNE
Advertisement **IGA Good Grocer notice board – 26 May 2026**	**Social Media** **Woodside North West Facebook post** **7 June 2026**
 BOARD	 Woodside North West June 7 at 9:16 AM Let's talk! Our team is at the Dampier Beachside Markets today from 9am to 12 noon. Drop by to share your feedback and learn more about Woodside's work in the North West, our Environment Plans, and our current and proposed projects. We are consulting relevant persons in the course of preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects. Let's Talk Woodside Energy

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Advertisement Lo's Café – 26 May 2026	Event presence Banner at event – 7 June 2026
	
Event presence Consultation Information Sheets at event	
	

6.5.1.3 FeNaCING Festival – 1 to 2 August 2026

Location	Karratha
Activity	FeNaCING Festival
Date	1 to 2 August 2026
Description of the consultation	Woodside hosted a stall at the FeNaCING Festival, Karratha, to engage community members on Woodside activities. The stand was staffed by Woodside representatives including from Environment and Corporate Affairs teams. Information was available on Woodside's activities in the north-west region and information sheets on flaring and marine seismic surveys were on display. Printed Consultation Information Sheets were also available, including for the Goodwyn Alpha Facility Operations EP.
Advertising and invitations	Woodside advertised the event to enable individuals to self-identify, become aware of the community consultation, and to allow individuals to provide feedback on proposed activities, through the following: (see evidence table below) • An advertisement published in the Pilbara News on 29 July 2026 edition • A social media post via Woodside North West Facebook account advising that Woodside would be in attendance at the event on 1 August 2026 • A social media post via FeNaCING Festival Facebook account advising that Woodside would be in attendance at the event on 30 July 2026 • An advertisement displayed on community noticeboards at Lo's Karratha on 28 July 2026

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	• An advertisement displayed on community noticeboards at IGA Good Grocer Karratha on 29 July 2026 • An EP consultation display with QR code (linked to the 'Consultation activities' page on Woodside's website) displayed at Woodside's stand.
Estimated number of individuals consulted	More than 10,000 community members attended the event. Woodside spoke to many community members, more than 1,100 engaged in a Woodside quiz, recording approximately 100 meaningful conversations.

Summary of Feedback, Objection or Claim

- Interest in local jobs, training opportunities and local procurement opportunities.
- Interest in Woodside's social contribution activities in City of Karratha.
- Conversations about Woodsides flaring activities.
- Conversations about Woodside's approach to cultural heritage management.
- Query about Woodside's tax contribution.
- Conversation about Woodside's approach to the energy transition and energy security.
- Interest in industry's political influence.
- General conversations about Woodside's activities in Western Australia, including the North West Shelf and Scarborough Energy Project, Pluto Train 2 and Pluto Train 1 modifications.
- Questions relating to the current status of the Browse to North West Shelf concept and considerations for Scott Reef.
- How and why Woodside develops EPs and the EP approval process.
- General interest in Woodside's health, safety and environmental management measures and mitigations, particularly in relation to seismic activities and potential impacts to fauna.
- Discussions with children about what Woodside does and where gas comes from.

Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response

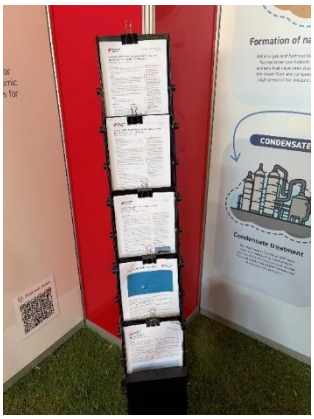
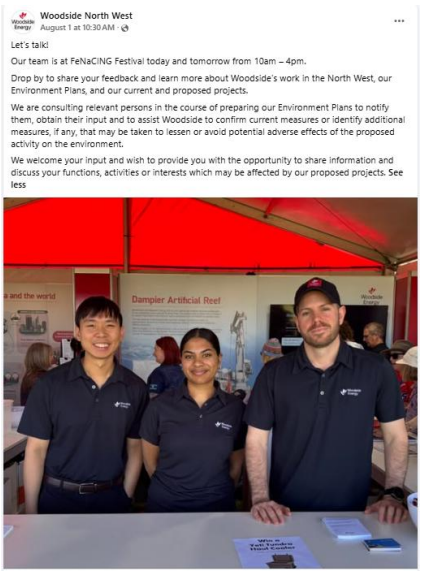
Whilst feedback was received, there were no objections or claims.

The community information sessions were part of Woodside's broader consultation approach to enable self-identification and provide relevant persons with the opportunity to assess any impacts on their functions, interests or activities, and provide feedback on proposed activities, which is consistent with the intended outcome of consultation (see Section 5.2).

Evidence of promotion and event

Advertisement **Pilbara News – 29 July 2026**	**Social media** **FeNaCING Festival Facebook page - 1 August 2026**
	

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Consultation Information Sheets at event	Consultation Information Sheets at event
	
Banner with QR code at event	**Woodside marquee**
	
Woodside North West Facebook 1 August 2026	**Promotional poster at Lo's Café Karratha 28 July 2026**
 Woodside North West August 1 at 10:30 AM · Let's talk! Our team is at FeNaCING Festival today and tomorrow from 10am – 4pm. Drop by to share your feedback and learn more about Woodside's work in the North West, our Environment Plans, and our current and proposed projects. We are consulting relevant persons in the course of preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse effects of the proposed activity on the environment. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects. See less	

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Promotional poster at BP service station Karratha **29 July 2026**	**Promotional poster at IGA Good Grocer Karratha**
	

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6.6 Community newsletters

6.6.1 Let's Talk – Our Plans, Your Say

6.6.1.1 Let's Talk – May 2026

Woodside Energy

Let's Talk

Our Plans, Your Say

Edition 7 | May 2026



Deep Orient vessel.

The rundown

Woodside crews aboard the Deep Orient vessel have wrapped up one of their most complex decommissioning campaigns to date, safely delivering the Deep Orient program in Western Australia's North West.

Decommissioning involves removing infrastructure that's no longer required. It's considered from the start of a project and is an ongoing consideration.

The Deep Orient activities spanned the Griffin and Stybarrow fields, as well as Echo Yodel, a subsea tieback to Goodwyn A. These assets stopped producing in 2009, 2015 and 2012 respectively.

Following the safe plugging and abandonment of the wells, crews on the TechnipFMC-operated vessel safely recovered a total of 4,000 tonnes of subsea infrastructure, including 73 kilometres of pipelines. That's around the distance from Woodside's Perth headquarters to Mandurah. They also recovered 37 subsea structures such as Xmas trees, buoys, wellheads and umbilical termination assemblies.

Our decommissioning program is among the largest in Australia. Reducing risk, applying lessons learned and continually improving how we work keeps us focused on safety, the environment and carrying out the work efficiently.

Our focus is also on reducing, reusing, recycling and treating materials before disposal is considered.

In 2025, crews completed a multi-year decommissioning program at the Enfield field, approximately 38 km north of the North West Cape, Western Australia. The program included plugging and abandoning 18 Enfield wells, recovering and deconstructing the Nganhurra riser turret mooring, and removing flexible flowlines, umbilicals and other subsea structures. The deconstruction of the Nganhurra riser turret mooring saw 99.6 per cent of materials reused, repurposed or recycled.

This marks Woodside's first complete lifecycle project, from exploration through development and operations to final decommissioning.

Upcoming engagement opportunities

Woodside is consulting with local community members at events, making it easy to speak to us about our operations, decommissioning activities and proposed projects.

If you're interested in what Woodside has planned on land and sea, come and chat to our friendly teams at the locations below, follow the Woodside North West Facebook page or email us at: feedback@woodside.com

You can meet us at:

- **KDCCI Markets at REAF**
  Friday, 15 May 2026,
  3 pm – 8 pm. The Quarter,
  20 Sharpe Avenue, Karratha,
  WA, 6714
- **Dampier Beachside Markets**
  Sunday, 7 June 2026,
  9 am – 12 noon. Hampton Oval,
  Dampier, WA, 6713
- **FeNaCl NG Festival**
  1-2 August 2026, 9 am – 4 pm.
  Bulgarra Oval, Karratha, WA,
  6714

Follow us on Facebook by clicking here



Come and speak to our friendly team.

To stay updated, subscribe for future editions at
woodside.com/what-we-do/consultation-activities

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Dampier fishers land a solid catch with new artificial reef

The bold vision of Woodside and Recfishwest to enhance marine life and recreational fishing in the Pilbara has become reality with the successful installation of an artificial reef off the coast of Dampier in north west Australia.

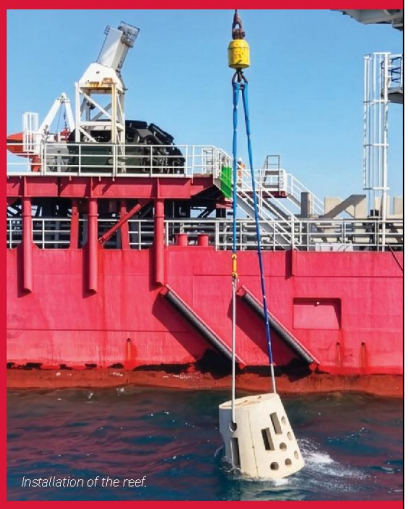
The reef comprises 48 purpose-built concrete modules. They were carefully transported and installed in early December 2025.

The reef sits in some 35 metres of water, about 30 kilometres from the Dampier boat ramp. Over time, the site is expected to become a high-quality fishing location for species such as Spanish mackerel, cobia, emperor, cod and even sailfish.

Delivered with the support of the WA Government, the City of Karratha, Traditional Owners and local fishing clubs, the Dampier Artificial Reef represents a significant collaboration to provide an accessible and productive marine environment the community can enjoy now and in the future.

The installation of the reef was funded by Woodside and its Scarborough Joint Venture partners JERA Australia and LNG Japan. Woodside also acknowledges its Enfield Joint Venture partner, Mitsui E&P Australia, for contributing to the acquisition of the concrete modules.

As the reef establishes, we understand Recfishwest plans to share updates with local fishers, families and visitors who are set to enjoy a richer marine environment and better fishing in the years ahead.



Installation of the reef.

Talking point

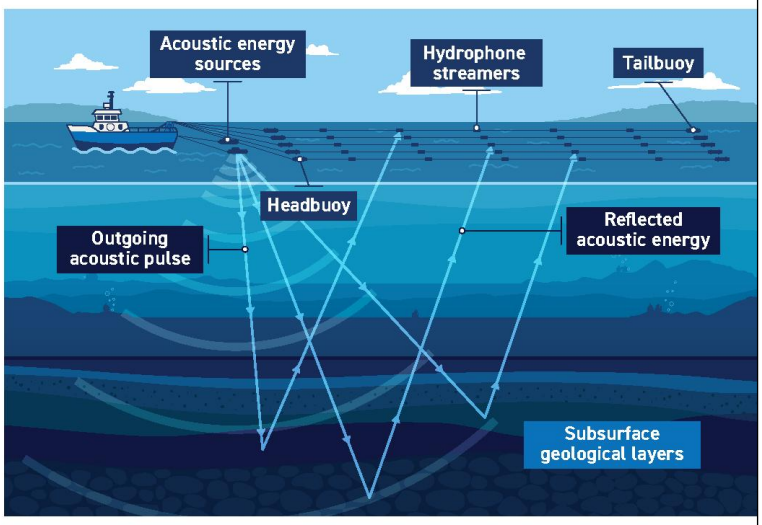
Pluto 4D M3 Marine Seismic Survey

Woodside's Pluto 4D M3 Marine Seismic Survey Environment Plan covers seismic survey activities in the Carnarvon Basin, north-west Australia, planned for late December 2026 to early February 2027, or the same period in the subsequent year.

Marine seismic surveys are a key technique used for geophysical exploration to understand what lies beneath the seabed, or subsurface. Woodside's seismic surveys are conducted under strict Australian and international regulations and management controls.

Marine seismic surveys are conducted by purpose-built survey vessels that tow specialised equipment placed in an array of long marine streamers. These vessels proceed at low speeds, typically around 4–5 knots (7.4–9.3 kilometres per hour), following predetermined sail lines to systematically map the survey area.

As the vessel moves, a sound source located at its rear releases compressed air as soundwaves into the water column at regular, short intervals. The soundwaves are reflected from subsurface rock layers to the water's surface, a bit like an echo. Sensitive microphones known as hydrophones, which are positioned within the streamers trailing behind the vessel, detect these soundwaves.



Alternatively, hydrophones and motion-sensitive sensors known as geophones can be embedded in small devices called ocean bottom seismic nodes, which are temporarily placed on the sea floor. The recorded sound is processed to generate images of subsurface structures, rock layers and other features for interpretation.

To learn more about marine seismic surveys, including methods that protect the marine environment, watch this video.



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Consultation opportunities

Environment Plan	Activity Type	Location	Consultation Dates
Minerva Decommissioning and Field Management (Commonwealth)	Decommissioning	~ 11 km south-southwest of Port Campbell, Victoria	May 2026
Minerva Decommissioning and Field Management (State)	Decommissioning	~ 11 km south-southwest of Port Campbell, Victoria	May 2026
Goodwyn Alpha Facility Operations	Operations	~ 138 km north-west of the town of Dampier, Western Australia	April-May 2026
Browse to North West Shelf (NWS) Project Geophysical and Geotechnical (GPGT) Surveys (Commonwealth)	Survey	~ 370 to 430 km north-northwest of Broome, Western Australia	April-May 2026
Browse to NWS Project GPGT Surveys (State)	Survey	~ 430 km north-northwest of Broome, Western Australia	April-May 2026
Browse to NWS Project Trunkline GPGT Surveys (Commonwealth)	Survey	~ 110 km north-west of Dampier, Western Australia	April-May 2026
CK4 and LH3 Well Intervention	Drilling	~ 135 km north-west of Dampier, Western Australia	April-May 2026

Under assessment (since previous edition)

Environment Plan	Activity Type	Month Submitted
Greater Western Flank Phase 4 Drilling and Subsea Installation	Development	April 2026
Pluto 4D M3 Marine Seismic Survey	Survey	March 2026
Angel Carbon Capture and Storage GPGT Surveys (Commonwealth)	Survey	January 2026
NWS Trunklines Operations (State)	Operations	November 2025
Pluto Trunkline Operations (State)	Operations	November 2025

Recently accepted (since previous edition)

Environment Plan	Activity Type	Date Accepted
Julimar-Brunello Plug and Abandonment	Decommissioning	April 2026
Pyrenees Facility Operations	Operations	February 2026
North Rankin Complex Facility Operations	Operations	January 2026
Goodwyn Alpha GPGT Surveys	Survey	January 2026
NWS Phase 1 Plug and Abandonment and TPA03 Well Intervention	Decommissioning	December 2025
OKHA Floating Production Storage and Offloading Facility Operations	Operations & Production	July 2025

Have your say

Woodside consults relevant persons while preparing our Environment Plans to notify them, obtain their input and to assist Woodside to confirm current measures or identify additional measures, if any, that may be taken to lessen or avoid potential adverse impacts of the proposed activity on the environment.

We welcome your input so please contact us if you'd like to discuss your functions, interests or activities which may be affected by our proposed activities.

You can access our consultation information, provide feedback and subscribe for updates by **clicking here**



Right: Woodside employees keen to chat with community at the Ningaloo Sky Festival in Exmouth, WA.

You can view Commonwealth Environment Plans for approved activities and operations by visiting:
info.nopsema.gov.au/home/approved_projects_and_activities

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Carnaby's black cockatoos. Picture: Dean Arthurell.

Let's talk about... The Watheroo Biodiversity Project

Woodside's Watheroo Biodiversity Project is a collaborative effort to restore landscapes and support biodiversity in WA's northern Wheatbelt.

The project focuses on having positive biodiversity outcomes for habitats, threatened species and ecological function, through working with government agencies, non-government organisations, and local Indigenous and community groups.

As of December 2025, Woodside has planted approximately 5.5 million seedlings across 8,500 hectares in the Watheroo area. The land under reforestation in Watheroo is adjacent to a large area of conservation estate, the Watheroo National Park and connected reserves, as well as a significant area of remnant vegetation currently designated as unallocated Crown land. Together the combined area is over 130,000 hectares.

In addition to generating Australian Carbon Credit Units (for more information, click here), the plantings will provide additional habitat for fauna and create connectivity between these areas of remnant vegetation and conservation estate.*

One highlight of the Watheroo Biodiversity Project is the support for threatened Carnaby's black cockatoos. These large birds are under threat primarily from habitat loss due to historic land clearing. Together with not-for-profit conservation charity group Carnaby's Crusaders, numerous artificial hollows were installed in 2024 and 2025 to address a shortage of natural nesting sites because hollows large enough for the species to nest within typically only form in trees well over 100 years of age.

Additional programs within the project include a large-scale Light Detection and Ranging (LiDAR) survey to provide insight into the current status of the vulnerable malleefowl population in the region, motion detection camera fauna monitoring, annual bird surveys to track change within reforested areas, vegetation surveys to understand current condition of and stressors on remnant vegetation, and management of invasive species.

Woodside recognises that restoring biodiversity is a long-term commitment, and outcomes will continue to be monitored and reported transparently.

**All planting has been completed under the Carbon Credits (Carbon Farming Initiative) (Restoration by Environmental or Mallee Plantings - FullCAM) Methodology Determination 2024, which is authorised by the Carbon Credits (Carbon Farming Initiative) Act 2011.*

You can read more about Woodside's Biodiversity management and initiatives **here**.

Browse to North West Shelf (NWS) Project Geophysical and Geotechnical (GPGT) Surveys

Woodside has previously undertaken GPGT surveys in the Browse Basin as part of earlier project concepts. A series of new GPGT surveys are proposed to support potential future activities associated with the Browse to NWS Project.

Survey data is intended to inform the design and installation of the proposed trunkline, pipelines and umbilicals, subsea structures, and the mooring systems for the two proposed floating production storage and offtake (FPSO) facilities and mobile offshore drilling units (MODUs). Data may also contribute to assessments of existing infrastructure, support environmental and heritage studies, and assist in planning potential future project activities.

These surveys will be conducted across both Commonwealth and State waters and are organised into three Environment Plans. Woodside is consulting on these Environment Plans in April-May 2026. For more information, you can view the Consultation Information Sheets.

Browse to NWS Project GPGT Surveys (Commonwealth)

Browse to NWS Project GPGT Surveys (State)

Browse to NWS Project Trunkline GPGT Surveys

Join the conversation at **woodside.com/what-we-do/consultation-activities**

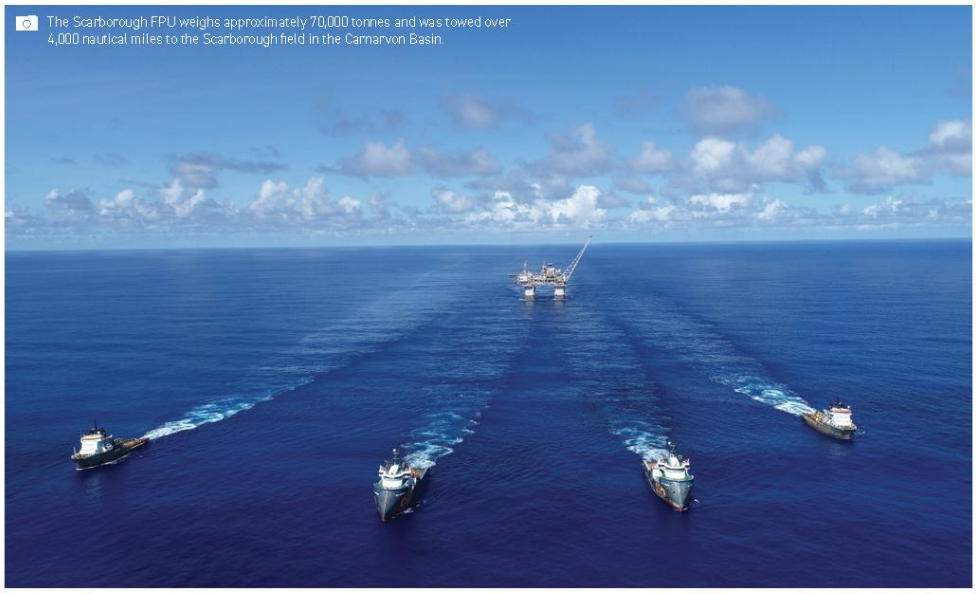
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6.6.2 Karratha Community Update

6.6.2.1 Edition Q1 – March 2026

Karratha Community Update

March 2026



The Scarborough FPU weighs approximately 70,000 tonnes and was towed over 4,000 nautical miles to the Scarborough field in the Carnarvon Basin.

Scarborough sails towards start up

This year marks a defining year for Woodside as the Scarborough Energy Project, including our Pluto Train 2 and Pluto Train 1 Modifications Projects in Karratha, move through final construction, commissioning and start up phases.

Across the Scarborough Energy Project, progress continues to track strongly toward first LNG cargo in the fourth quarter of 2026. The development is now more than 94% complete (excluding Pluto Train 1 modifications) and has already delivered economic benefits to the Karratha and Roebourne communities. Once operating, it is expected to support long-term energy supply for Western Australia and the wider Asia-Pacific region.

Offshore, a major milestone was achieved early this year with the safe arrival of the Floating Production Unit (FPU) at the Scarborough field, 375 km off the coast of Karratha. Hook-up and commissioning activities are underway in preparation for production.

Onshore, work at Pluto Train 2 remains focused on piping and electrical installation, system testing and commissioning, ahead of introduction of Scarborough gas to site later in the year.

Meanwhile, the Pluto Train 1 Modifications Project has ramped up. These modifications will enable the processing of additional Scarborough gas through our existing LNG train at Pluto LNG. New modules are expected to arrive through Dampier Port over the coming months.

Collectively, these projects represent the most significant investment in the region in more than a decade.

Together with our contractors, we've invested more than A$260 million with 200 Pilbara-based businesses. A$149 million of that figure has been invested with Pilbara-based businesses engaged on the Pluto Train 2 Project.

As we approach the finish line and a future with two trains operating at the Pluto LNG Park, we will continue to focus on managing impacts and delivering positive outcomes for the Karratha and Roebourne communities.

Mike Price
Woodside Vice President Pluto Scarborough Asset

Stay up to date on our continued contribution to the local community Woodside North West

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Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's first peoples.

We acknowledge the unique connection of the Traditional Custodians to land, waters and the environment where we operate in the City of Karratha.

We extend this recognition and respect to First Nations peoples and communities around the world.

Refreshed North West Shelf Visitor Centre

With the support of local Karratha contractors, last year the North West Shelf (NWS) Project Visitor Centre underwent a refresh to enhance the experience for visitors.

The Visitor Centre welcomes thousands of community members through its doors each year, from visitors to the region to school groups. It offers an opportunity to learn more about the NWS Project's history in Karratha, its operations and its ongoing role in supplying energy security in Western Australia and beyond.

Acting Asset Manager NWS Onshore, Perrine Lombart, said working closely with local contractors was a key focus in creating a modern visitor experience.

"We are proud to be part of the Karratha community, and the refreshed Visitor Centre allows us to share our story - from the history of Woodside and the NWS Project, to the important role we play in supporting the communities where we live and work."

The works brought together local contractors, including Birndirri, Impact Digi and C Signs, strengthening the NWS Project's contribution to the regional economy and prioritising local capability. Their involvement drew on longstanding experience of working in the Pilbara.

Jake Throssell, Construction Supervisor at Birndirri, said the project demonstrated the value of working closely with local contractors.

"Working with the Woodside team to deliver the Visitor Centre refresh was a positive experience and we are proud to have contributed to a space that visitors can enjoy for many years to come."

Jason Miltrup, Operations Manager at Impact Digi, said working with Woodside to redesign the Visitor Centre signage has been a great project for the team.

"We're proud to have played a role in transforming the space into a modern and engaging environment for visitors."

Cameron Inch, Director of C Signs, said the project was a valuable opportunity for local businesses.



Visitors are warmly welcome to experience the refreshed centre.

"Being part of the Visitor Centre refresh allowed us to bring the NWS Project's history and operations into focus and showcase the capabilities of our small business."

The Visitor Centre will be open from Tuesday, 7 April 2026, more details below:

Street Address:
Burrup Road, Burrup Peninsular, Dampier WA, 6713
Opening Times:
April - October
School term: 10am - 2pm, Tuesday and Wednesday
School holidays: 10am - 2pm, Tuesday - Friday

Follow the Woodside North West Facebook page for updates to opening hours here.

Woodside welcomes new apprentices and trainees


New starters at Woodside Training Academy.

Woodside are delighted to welcome the 2026 trainee and apprentice cohort across our North West operations.

This year, 23 Karratha-based recruits will be hosted at the Woodside Training Academy, 13 are local school leavers. Employed by Programmed Skilled Workforce, roles include service operator trainees, apprentices, pathway trainees and school-based trainees.

The new recruits now form part of a broader group of 63 apprentices and trainees developing their skills across Woodside's Karratha Gas Plant, Pluto LNG Park and Karratha Supply Facilities.

Reflecting our commitment to diversity, 47% of recruits this year are women and 52% are Indigenous, strengthening our future workforce and continuing our long-standing investment in local capability.

We can't wait to see where this journey takes our newest team-mates.

Stay up to date on our continued contribution to the local community Woodside North West

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Pluto LNG and flare maintenance underway



In 2026, Woodside is undertaking a series of important works at Pluto LNG as we prepare to integrate the exiting facility with the Scarborough Energy Project. This includes improvement works to our flare system and a major planned maintenance campaign, known as a turnaround, commencing in May 2026.

Together with the upcoming commissioning and start-up of the new Pluto Train 2 facilities later this year, these staged works support the safe and reliable operations of Pluto LNG.

The turnaround includes a planned shutdown of parts of the facility so essential inspections, repairs, and upgrades can be carried out safely. This work can't be done while the plant is operating. To make the systems safe to execute the maintenance and project scopes, hydrocarbons need to be removed. This is the primary source of flaring during a turnaround.

Alongside preparation for the turnaround, Woodside is carrying out improvement activities on Pluto LNG's flare systems as part of our regular maintenance program. These works will help ensure the facility continues to operate safely and reliably, improve how gas is burned in the flare and reduce smoke where possible. It also ensures the flare system is ready to support future operations.

Flare improvement works are being completed in stages and are expected to continue in the first half of 2026. A testing stage is required to confirm systems are operating as intended before returning to normal operations.

Increased flaring is expected at Pluto LNG during these activities, particularly during system testing and restart works. This may include larger flames, increased noise, and occasional visible smoke, which is managed and reported in line with regulatory requirements.

Woodside adheres to regulatory requirements governing emissions, including those from flaring activities, and we implement robust monitoring to minimise environmental impacts.

To learn more about flaring, we invite you to view a short animation by scanning the QR code. You can also contact the Woodside Community Information Line on 1800 634 988.

Learn more about Woodside controlled flaring here.

Locals land a solid catch with new artificial reef

Recreational fishers in Dampier and Karratha have something to get excited about, with Recfishwest and Woodside Energy successfully installing a new artificial reef near Rosemary Island. The project has been years in the making with aims to boost local marine life and create a high-quality fishing destination for Pilbara residents and visitors.

The reef is made up of 48 purpose-built concrete modules, transported and lowered into place in December 2025. Within days, the first marine species began moving in. Acting EVP and COO Australia, Breyden Lonnie said the project reflects Woodside's commitment to supporting the region.

"Woodside is excited to collaborate with Recfishwest and the local fishing community to bring this new reef to life," he said. "The reef is expected to provide a productive marine habitat for diverse species of algae and corals, supporting an abundance of fish life."

Situated in approximately 35 metres of water and roughly 30 kilometres from the Dampier boat ramp, the reef's modules have been engineered with complex internal spaces that encourage coral growth, protect juvenile fish and support larger species such as spanish mackerel, cobia, emperor, cod and even sailfish. For local fishers it is expected to become a new fishing hotspot.

It's not all about fishing action. The reef is also expected to support local tourism and economic activity. Similar artificial reefs like Exmouth's King Reef, have shown how previously barren seafloor can transform into thriving ecosystems supporting more than 150 species within a few years.

The Dampier Artificial Reef is a true community effort, delivered with support from the WA Government, the City of Karratha, Traditional Owners and local fishing clubs.



Dampier Artificial Reef coordinates.



48 concrete modules were carefully lowered into place.

Recfishwest will provide updates as the reef continues to establish. For now, Pilbara anglers can look forward to a fresh fishing hotspot right on Dampier's doorstep.

The installation of the reef was funded by Woodside and its Scarborough Joint Venture partners; JERA Australia and LNG Japan. Woodside also acknowledges its Enfield Joint Venture partner Mitsui E&P Australia, for contributing to the acquisition of the concrete modules for the reef.

Stay up to date on our continued contribution to the local community Woodside North West

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Murujuga Ranger vessel Nyamina sets sail

Representatives from Murujuga Aboriginal Corporation (MAC) Rangers and Circle of Elders, State Government and Woodside Energy joined together recently to celebrate the launch of the new Murujuga Ranger vessel, the Nyamina.

Named after the dugongs that inhabit Murujuga Sea Country, the Nyamina is a custom-built 5.8 metres rigid-hulled inflatable boat, designed for inshore waters and safe landing and unloading on beaches.

The vessel was funded by the State Government via Lotterywest and Woodside Energy, which contributed support towards the vessel, additional camera equipment and two years of operating costs.

Guided by the Murujuga Circle of Elders, the vessel will support ongoing collaboration between Rangers, government agencies and researchers in the management of Sea Country. It also provides the opportunity for Rangers to gain diverse skills and qualifications, including coxswain certification.

MAC Chairperson Peter Hicks said "The launch of this vessel is a proud moment for Murujuga, our Rangers, and for the ongoing care of our World Heritage listed Murujuga Cultural Landscape, which extends across the Burrup Peninsula, the islands of the Dampier Archipelago, and Sea Country."

Matthew Turnbull, General Manager Scarborough Business shares Woodside's pride in co-funding the vessel, supporting Ranger-led management of Murujuga and long-term outcomes for cultural heritage and Country. He says "MAC Rangers play a critical role in protecting cultural heritage, monitoring Country and supporting research across the World Heritage Listed Murujuga Cultural landscape."

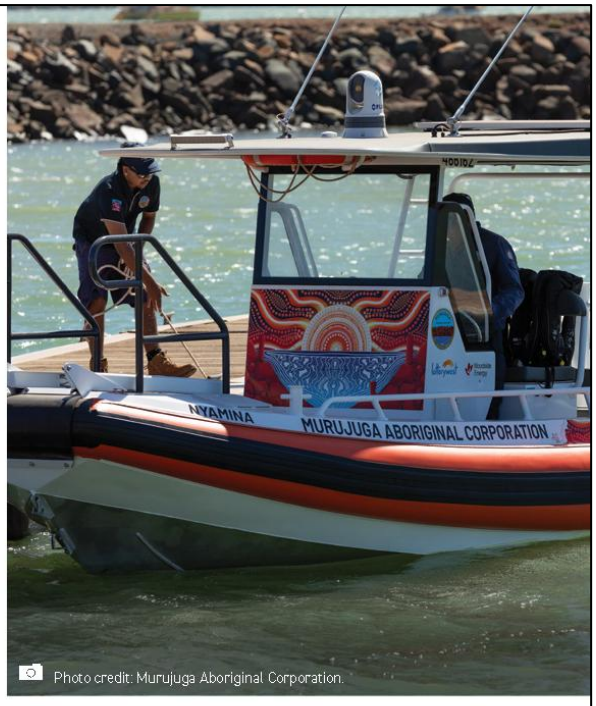


Photo credit: Murujuga Aboriginal Corporation.

"The launch of Nyamina gives the Rangers greater capability to manage Sea Country and to continue this important work safely and independently."

Watch the official launch on MAC's YouTube here.

KGP sets new record for lowest flaring

In 2025, Woodside achieved record low flaring performance at Karratha Gas Plant with flared quantities less than 10% of their peak in 2013.

This success reflects years of continuous improvement, which Matt Ladner, Senior Emissions and Production Optimisation Engineer, credits to a strong culture focused on emissions reduction, safety and reliability.

"It's a testament to the dedication of our engineering and operations teams who have embedded low-flaring practices into daily routines and decision making," says Matt.

"The record has been a result of a reliable plant and playing the long game in identifying and implementing flare reduction opportunities," explains Matt.

Flaring targets are set each year based on planned maintenance activities and expected plant reliability.

In 2025, Woodside implemented solutions to reduce our daily flaring by removing permanent gas supply to the flare, as well as optimised LNG plant maintenance and equipment restart improvements.

Woodside Community Grants

Applications now open

The Woodside Community Grants program is part of our commitment to help build local capacity and develop opportunities for community wellbeing.

If your club or organisation has a great idea or needs extra support, Woodside wants to hear from you. Grants of up to $5000 are available to support community initiatives in the City of Karratha, Shire of Exmouth and Town of Onslow.



Applications close Tuesday, 31 March 2026.

Find out more about Woodside Community Grants here.
For more information, please email northwestcommunities@woodside.com

woodside.com

Woodside Energy

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6.6.2.2 Edition Q2 – June 2026

Karratha Community Update

June 2026

Proposed Browse to North West Shelf Project continues to progress

The proposed Browse to North West Shelf (NWS) Project (Browse) presents a significant opportunity for Karratha, Western Australia and our regional partners.

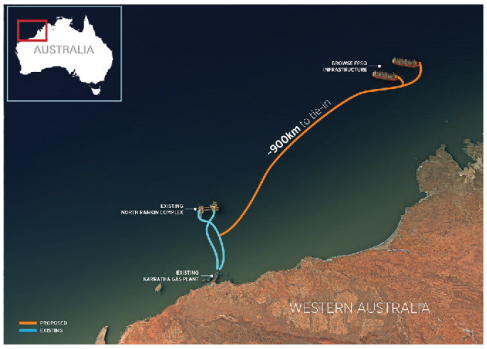
As Australia's biggest undeveloped offshore gas resource, Browse offers long-term energy security to power homes and businesses and could create thousands of jobs and considerable economic benefits and tax revenue.

Importantly, processing Browse natural gas through the existing NWS infrastructure will keep the Karratha Gas Plant (KGP) operating, supporting local jobs in the region and helping Woodside continue its long-standing support for the Karratha and Roebourne communities.

The Browse project will develop gas fields in the Browse Basin, approximately 425 kilometres north of Broome, with gas transported via subsea pipelines to existing NWS infrastructure near Karratha.

A key focus of the project is carbon management. The development concept includes carbon capture and storage (CCS) infrastructure, designed to capture and permanently store a significant portion of carbon dioxide produced from the gas fields. This could reduce the project's emissions and lower the carbon intensity of gas supplied through the NWS.

Minimising environmental impacts is also central to project planning. The project is undergoing environmental assessment processes with both the Western Australian Environmental Protection Authority and the Commonwealth Department of Climate Change, Energy, the Environment and Water. As this assessment has progressed, Woodside has continued to provide updated scientific data and committed to additional measures aimed at minimising environmental impacts to marine life, including pygmy blue whales and green turtles. These changes include design, operational and monitoring controls, including spatial setbacks from sensitive receptors, vessel speed and noise management measures, and enhanced monitoring programs focused on key habitats such as Sandy Islet.



This image is conceptual only, not to scale. Developments are subject to joint venture approvals, regulatory approval and relevant commercial arrangements.

These measures build on more than 30 years of research carried out by Woodside and its joint venture partners at Scott Reef and in surrounding waters.

Browse is currently in the concept definition phase. As planning continues, Woodside has committed to ongoing engagement with regulators, Traditional Owners, local communities in the Pilbara and key stakeholders as the project is progressed.

For more information, view the Browse fact sheet here

Browse to deliver long-lasting benefits

MORE JOBS
4,760

Direct and indirect full-time equivalent jobs estimated across Australia at peak operations.[2]

Equivalent to staffing around 80 Western Australian public schools for a year.[3]

MORE TAX
A$56.2 BILLION

In estimated taxes, royalties and excise, including ~A$19.8 billion in Petroleum Resource Rent Tax (PRRT).

Equivalent to funding one new hospitalevery year for 31 years.[4]

STRONGER ECONOMY
~A$141 BILLION

Estimated uplift in Gross Domestic Product (GDP).[5]

On average, economic activity in Australia is expected to increase by around A$2.9 billion each year over the life of the Project, equivalent to more than 5 per cent of Australia's average annual GDP growth.[6]

Headline economic Figures are based on Deloitte Access Economics' independent modelling.[1]

1. Deloitte Access Economics, Browse to NWS Economic Impact Assessment, May 2026. Report commissioned by Woodside as Operator on behalf of the Browse Joint Venture. 2. Reflects broader supply chain and service industry roles generated across all regions. 3. Department of Education's 2024-25 Annual Report. 4. Women and Babies Hospitals - WA Government (2025) Budget Paper No. 2 Volume 1. 5. 2025 real undiscounted terms. Uplift over the life of the Project. A$34.2 billion in present value terms. Discounted at seven per cent per annum. 6. Australian Bureau of Statistics, Australian National Accounts 2024-25.

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We extend this recognition and respect to Indigenous Peoples and communities around the world.

Sharing stories from Ngarluma and Yindjibarndi Country



Sharon Warrie, Art Development Camp. Perth 2025. Photo by Marnie Richardson courtesy of FORM

The Woodside-operated Pluto LNG Project's community partnership with FORM is supporting Roebourne (Ieramugadu) artists to share important cultural stories from Ngarluma and Yindjibarndi Country.

As part of the community partnership, last year FORM worked with local artists to present the Where We Come From: The Artists of Ngarluma and Yindjibarndi Country exhibition at FORM Gallery in Perth. The exhibition showcased art that highlights rich cultural histories, lived experiences and strong connections to Country.

The project was shaped to tell these stories in an authentic and meaningful way. The result was a community-led exhibition that celebrated culture while also giving artists hands-on experience in curation, exhibition design and public engagement, helping build skills for future opportunities in arts.

More than 3,300 people visited the exhibition, taking part in guided tours, storytelling sessions, panel discussions and children's workshops, gaining a deeper understanding of local culture and identity.

Woodside is proud to support initiatives like this as part of our broader investment in Roebourne, helping strengthen local capability, culture and community wellbeing.

Woodside's 2026 Academy Awards

Woodside is proud to welcome 25 apprentices and trainees who have graduated from the Woodside Training Academy, marking an important milestone as they transition into roles across our business.

The Woodside Training Academy Graduation and Awards, held at the Red Earth Arts Precinct in Karratha, celebrated the cohort's achievements and recognised the dedication, resilience and perseverance shown throughout their training journey.

Academy Team Lead, Jacqui Meeson said the event was an opportunity to acknowledge both the collective success of the cohort and the outstanding contribution of the individuals.

"The award recipients were recognised not only for their technical capability, but for their commitment to learning, teamwork and living Woodside's values," Jacqui said.

"We are incredibly proud of what this group has achieved and look forward to their continued contribution to our workforce."

The ceremony also acknowledged the important role of mentors, supervisors and trainers who supported the graduates along the way. Pluto Asset Manager, Kate Bardill, thanked those across the business who contributed to developing future talent.

"Our graduates have built strong technical foundations and demonstrated the behaviours that will set them up for success," she said.

Woodside continues to invest in building local capability through its long-standing partnership with Programmed Training Services. Around 80 apprentices and trainees are currently hosted across the Australian business, developing skills and experience that will support the future of our operations in Western Australia.



Woodside's 2026 Training Academy graduates on stage in Karratha, celebrating the successful completion of their apprenticeships and traineeships.

Stay up to date on our continued contribution to the local community **Woodside North West**

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Roebourne school upgrade opens doors for students

Students and families in Ieramugadu (Roebourne) are now enjoying new and upgraded facilities at Roebourne District High School, following completion of the latest stage of the school's redevelopment.

The new facilities include additional classrooms for advisory programs, dedicated pastoral care spaces and preparation areas for teachers, Aboriginal and Islander Education Officers, and student support services, helping create a more supportive and engaging learning environment.

The redevelopment is part of a multi-stage project focused on improving education outcomes in Roebourne, while embedding Indigenous history, culture and language into the design and daily life of the school.

Woodside contributed A$20 million towards the project through the Resources Community Investment Initiative, as part of our broader, long-term investment in the Roebourne community.

In 2025, Woodside and its Joint Venture participants also invested more than A$5.7 million in programs supporting education and community wellbeing in Roebourne.

Woodside Chief Executive Officer, Liz Westcott said the opening marked an important milestone.

"For Woodside, supporting communities means working in partnership and investing for the long term," Liz said.

"Education has always been central to that commitment in Roebourne, and these new facilities reflect what can be achieved when community, government and industry work together."



Students from Ieramugadu (Roebourne) at the opening of the new and upgraded facilities alongside WA Premier Roger Cook and Woodside CEO Liz Westcott.

For more than a decade, Woodside has worked alongside the school and educators through the Karratha and Roebourne Education Initiative, supporting literacy and numeracy development, strengthening student engagement and pathways beyond school.

Celebrating creativity and connection at REAF

Woodside and our joint venture partners were pleased to support the City of Karratha's Red Earth Arts Festival (REAF) for another year, with a vibrant 2026 program bringing the community together through arts, culture and creativity.

At The Quarter, our continued support helped deliver a range of free, family-friendly activities, transforming the space into a lively hub of artistic and cultural activity. A highlight was the Harmony & HeART community event, featuring live entertainment, roving performers, markets and activities for all ages.

The 'Silent Observers' installation brought tree disc artworks to life through projection mapping, creating an engaging and immersive visual experience.

Artists from Yinjaa-Barni Art Group painted and displayed artworks on site, welcoming the community to watch the creation of several pieces and engage in conversations. They also hosted a kids' workshop, where young creatives could learn about culture and storytelling through art, creating their own pieces to take home.

The evening program featured roving entertainment, stage performances, music, food trucks and the Karratha & Districts Chamber of Commerce and Industry markets. Woodside employees at the Woodside stall enjoyed the opportunity to engage with the community, share updates on our activities in the north west and hear local feedback in a relaxed and welcoming environment.

Thanks to the City of Karratha for featuring the four-day festival delivered a diverse mix of performances, workshops and experiences across Karratha and surrounding communities, including Roebourne, Dampier, Cossack and Point Samson.

Audiences enjoyed a strong line-up of local, national and Indigenous artists, including the West Australian Opera Gala and theatre performances such as Blacksheep and Shadow Boxing, alongside live music, comedy and cultural storytelling.

REAF continues to grow as a much-loved event in the region, and Woodside and its joint venture partners are proud to support community events that contribute to the vibrancy and liveability of the Pilbara.







Highlights from the Red Earth Arts Festival (REAF) in Karratha, where Woodside employees enjoyed engaging with the community. Photos courtesy of Pilbara Site Photos and Woodside.

Stay up to date on our continued contribution to the local community Woodside North West

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Pluto Train 2 project update

As operator of the Pluto LNG facility, Woodside's priority is safe and reliable operations.

We are undertaking work to support the commissioning and start-up of Pluto Train 2 as part of the Scarborough Energy Project. The project is currently on track for first cargo in Q4 2026.

This will result in increased flaring with the potential for some visible dark smoke.

Woodside closely monitors and aims to minimise flaring as part of our normal operations.

To learn more about our commissioning and start-up activities contact us via;

Phone: 1800 634 988

Email: northwestcommunities@woodside.com



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APPENDIX G OIL SPILL PREPAREDNESS AND RESPONSE MITIGATION ASSESSMENT

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Woodside Energy

Oil Spill Preparedness and Response Mitigation Assessment for Goodwyn Alpha Facility Operations

Corporate HSE

Hydrocarbon Spill Preparedness

August 2026

Revision 1a

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EXECUTIVE SUMMARY

Woodside Energy Limited (Woodside) has developed its oil spill preparedness and response position for the GWA Facility Operations, hereafter known as the Petroleum Activity.

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to As Low as Reasonably Practicable (ALARP) and an acceptable level. It achieves this by evaluating response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the Petroleum Activity described in the Environment Plan (EP). This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

Key details of assessment	Summary	Reference to additional detail
Worst Case Credible Scenarios (WCCS)	**MEE-01 Scenario-01:** 76-day Subsea release of 300,985 m³ of Yodel-3 Condensate at 19° 45' 4.365" S 115° 43' 44.79" E, in 132 m water depth. 300,985 m^3 over 76 days of Yodel-3 condensate. 2.50 % residual component of 7,524.6 m^3 or 99 m^3 per day	Section 2.2
	MEE-01 Scenario-02: Long-term (68-day) uncontrolled surface release of 171,033 m^3 of GWA Condensate (GWA03) from the GWA Platform at 19° 39' 12.809" S 115° 55' 42.57" E. 171,033 m^3 over 68 days of GWA-03 condensate. 1.6% residual component of 2,736.5 m^3 or 40.2 m^3 per day.	
	MEE-05 Scenario-08: Short-term (Instantaneous) Surface Release of Marine Diesel Oil after a Vessel Fuel Tank Rupture near the GDA05 Well at 19° 45' 10.681" S, 115° 52' 42.898" E Instantaneous release of 1,000 m^3. 5% residue component of 50 m^3.	
Hydrocarbon Properties	**Yodel-3 Condensate** Yodel-3 Condensate (API 54.4) is a mixture composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which would begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 63.1% of the oil mass should evaporate within the first 12 hours (BP < 180 °C), a further 25.3% should evaporate within the first 24 hours (180 °C < BP < 265 °C), and a further 9.1% should evaporate over several days (265 °C < BP < 380 °C). Approximately 2.5% of the oil is shown to be persistent **GWA Condensate (GWA03)** GWA condensate (GWA03) is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 71.6% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 19.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 7.0% should evaporate over several days (265 °C < BP < 380 °C). Approximately 1.6% of the oil is shown to be persistent. **Marine Diesel Oil (MDO)** In general, about 6% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 35% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54% should evaporate over several days (265 °C < BP < 380 °C). Approximately 5% of the oil is shown to be persistent.	Section 6.8 of the EP Appendix A of the First Strike Plan

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<table>
<tr><th>Key details of assessment</th><th>Summary</th><th>Reference to additional detail</th></tr>
<tr><td>Modelling Results</td><td colspan="3">Stochastic modelling:
A quantitative, stochastic assessment has been undertaken for credible spill scenarios to help assess the environmental risk of a hydrocarbon spill.
A total of 100 replicate simulations were completed for the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (25 simulations per quarter).

Deterministic modelling:
Deterministic modelling was undertaken for MEE-01 Scenario-02 (WCCS) to establish the following for response planning purposes:
• Minimum time to floating oil contact with offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m^2).
• Minimum time to commencement of oil accumulation at any shoreline receptor (at a threshold of 100 g/m^2).
• Maximum cumulative oil volume accumulated across all shoreline receptors (at concentrations in excess of 100 g/m^2).
• Maximum cumulative oil volume accumulated at any individual shoreline receptor (at concentrations in excess of 100 g/m^2).</td><td>Section 2.3</td></tr>
<tr><td></td><td><table>
<tr><th></th><th>MEE-01 Scenario-01: 76-day subsea release of 300,985 m^3 of Yodel-3 Condensate</th><th>MEE-01 Scenario-02: 68-daysurface release of 171,033 m^3 of GWA Condensate (GWA03) from the GWA Platform</th><th>MEE-05 Scenario-08: Instantaneous surface release of MDO after a vessel fuel tank rupture near the GDA05 Well</th></tr>
<tr><th></th><th>Stochastic</th><th>Deterministic</th><th>Stochastic</th></tr>
<tr><td>Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)</td><td>Rankin Bank – 7 hours</td><td>Floating contact at 10 g/m^2 – Open Water only</td><td>Floating contact at 10 g/m^2 – Open Water only</td></tr>
<tr><td>Minimum time to shoreline contact (above 100 g/m^2)</td><td>NA - No shoreline contact at 100 g/m^2</td><td>Muiron Islands – 71.4 days (5.7 m^3)
(Q2, Run 2)</td><td>NA - No shoreline contact at 100 g/m^2</td></tr>
<tr><td>Largest volume ashore at any single Response Protection Area (RPA) (above 100 g/m^2)</td><td>NA - No shoreline contact at 100 g/m^2</td><td>Muiron Islands – 5.7 m^3 (71.4 days)
(Q2, Run 2)</td><td>NA - No shoreline contact at 100 g/m^2</td></tr>
<tr><td>Largest total shoreline accumulation (above 100 g/m^2) all shorelines</td><td>NA - No shoreline contact at 100 g/m^2</td><td>Muiron Islands – 5.7 m^3 (71.4 days)
(Q2, Run 2)</td><td>NA - No shoreline contact at 100 g/m^2</td></tr>
<tr><td>Minimum time to dissolved hydrocarbon contact with the offshore edges of any receptor</td><td>Rankin Bank – 7 hours</td><td>Data not available</td><td>Data not available</td></tr>
</table></td><td></td></tr>
</table>

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Key details of assessment	Summary				Reference to additional detail
	polygon (at a threshold of 10 ppb)				
Net Environmental Benefit Analysis	Monitor and evaluate, source control, containment and recovery, protection and deflection, shoreline clean-up, oiled wildlife response, are all identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment.				Section 4
ALARP evaluation of selected response techniques	The evaluation of the selected response techniques shows the proposed controls reduced the risk to an ALARP and acceptable level for the risk presented in Section 2, without the implementation of considered additional, alternative or improved control measures.				Section 7

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1 INTRODUCTION

1.1 Overview

Woodside Energy Ltd. (Woodside) has developed its oil spill preparedness and response position for the Goodwyn Alpha (GWA) Facility operations, hereafter known as the Petroleum Activity. This document outlines Woodside's decisions and techniques for responding to a hydrocarbon loss of containment event and the process for determining its level of hydrocarbon spill preparedness.

1.2 Purpose

This document, together with the documents listed below, meet the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The Goodwyn Alpha Facility Operations Environment Plan (EP)
- Hydrocarbon Spill Australia Regulatory Framework[1]
- The Goodwyn Alpha Facility Operations Oil Pollution Emergency Plan (OPEP) including
  - Oil Pollution First Strike Plan (FSP)
  - Operational and Scientific Monitoring Bridging Implementation Plan (OSM BIP)[2]
  - Relevant Operations Plans
  - Relevant Tactical Response Plans (TRPs)
  - Relevant Supporting Plans
  - Data Directory.

1.3 Scope

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to ALARP and an acceptable level. It achieves this by evaluating response options to address the potential environmental risks and impacts resulting from an unplanned loss of hydrocarbon containment associated with the Petroleum Activity described in the EP. This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in Table 1-1. The location of the Petroleum Activity is shown in Figure 3-1 of the EP.

1.4 Oil spill response document overview

The documents outlined in Table 1-1 and Figure 1-1 are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Plan (FSP) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this Petroleum Activity. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the oil pollution FSP is underway. The IAP includes inputs from monitor and evaluate and operational monitoring activities and the operational NEBA (Section 4). Planning, coordination and resource management are initiated by the Corporate Incident

[1] In accordance with Regulation 56 of the Environmental Regulations, references to the Hydrocarbon Spill Australia Regulatory Framework within this document refer to the version submitted with accepted North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website at: https://docs.nopsema.gov.au/A1282743

[2] In accordance with Regulation 56 of the Environmental Regulations, references to the Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) within this document refer to the OSM-BIP submitted with accepted North West Shelf Phase 1 Plug and Abandonment and TPA03 Well Intervention Environment Plan, which is available on NOPSEMA's website at: https://docs.nopsema.gov.au/A1282743

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Management Team (CIMT). In some instances, technical specialists may be utilised to provide expert advice. The planning may also involve liaison officers from supporting government agencies.

During each operational period, field reports are continually reviewed to evaluate the effectiveness of response operations. In addition, the operational NEBA is continually reviewed and updated to confirm the response techniques implemented continue to result in a net environmental benefit (Section 4).

The response will continue as described in Section 5 until the response termination criteria have been met.

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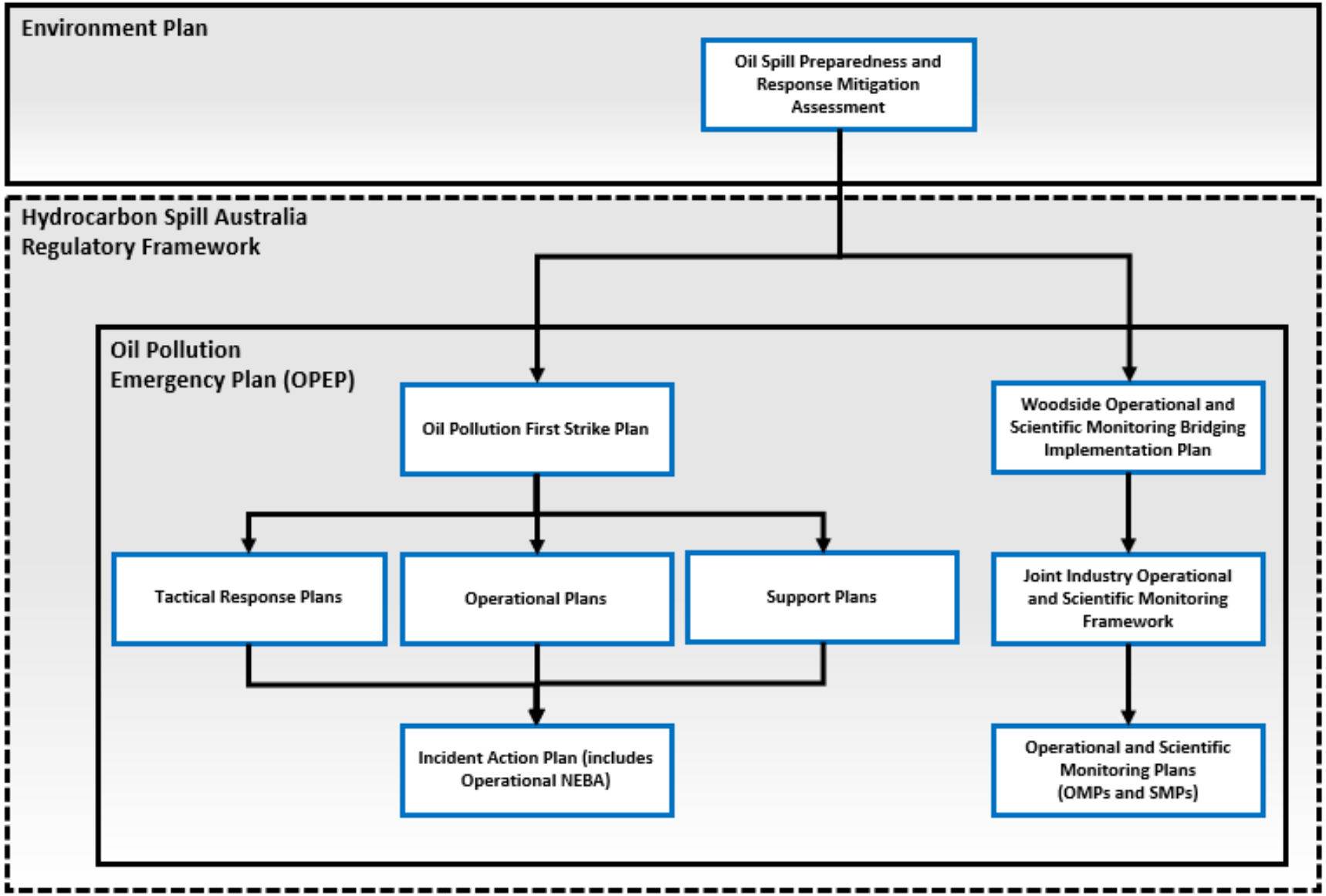


Figure 1-1: Woodside hydrocarbon spill document structure

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Table 1-1: Hydrocarbon spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Goodwyn Alpha Facility Operations Environment Plan (EP)	Demonstrates that potential adverse impacts on the environment associated with the Goodwyn Alpha Facility operations (during both routine and non-routine operations) are mitigated and managed to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level.	National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) Woodside internal	EP Section 6 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 6 (Performance outcomes, standards and measurement criteria) EP Section 7 (Implementation strategy – including emergency preparedness and response, and Reporting and compliance)	
Hydrocarbon Spill Australia Regulatory Framework[1]	Describes the arrangements and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity.	Regulatory agencies Woodside internal	All	
Oil Spill Preparedness and Response Mitigation Assessment for the Goodwyn Alpha Facility Operations (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the Petroleum Activity described in the EP.	Regulatory agencies Corporate Incident Management Team (CIMT): Control function in an ongoing spill response for activity-specific response information.	All Performance outcomes, standards and measurement criteria related to hydrocarbon spill preparedness and response are included in this document.	
Goodwyn Alpha Facility Operations Oil Pollution First Strike Plan	Facility specific document providing details and tasks required to mobilise a first strike response. Primarily applied to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed. Oil Pollution First Strike Plans are intended to be the first document used to provide immediate guidance to the responding Incident Management Team (IMT).	Site-based IMT for initial response, activation and notification. CIMT for initial response, activation and notification. CIMT: Control function in an ongoing spill response for activity-specific response information.	Initial notifications and reporting required within the first 24 hours of a spill event. Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill trajectory modelling, aerial surveillance and oil spill tracking buoy details.	

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Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Operational Plans	Lists the actions required to activate, mobilise and deploy personnel and resources to commence response operations. Includes details on access to equipment and personnel (available immediately) and steps to mobilise additional resources depending on the nature and scale of a release. Relevant operational plans will be initially selected based on the Oil Pollution First Strike Plan; additional operational plans will be activated depending on the nature and scale of the release.	CIMT: Operations and Logistics Sections for first strike activities. CIMT: Planning Section to help inform the IAP on resources available.	Locations from where resources may be mobilised. How resources will be mobilised. Details of where resources may be mobilised to and what facilities are required once the resources arrive. Details on how to implement resources to undertake a response.	Operational Monitoring Operational Plan Wells Global Source Control Emergency Response Plan Containment and recovery Protection and deflection Shoreline clean-up Oiled wildlife response
Operational and Scientific Monitoring (OSM) Bridging Implementation Plan[2]	Describes a program of monitoring oil pollution that will be adopted in the event of a hydrocarbon spill incident (Level 2–3) to marine waters. It is aligned to the Joint Industry Operational and Scientific Monitoring Framework (Australian Petroleum Production & Exploration Association (APPEA) [now Australian Energy Producers (AEP)]), 2021) and describes how this Framework applies to Woodside's activities and spill risks in Australian waters.	Site-based IMT for initial activation and notification. OSM Service Providers Regulatory agencies	Mobilisation and notification process for OSM, including activation of OSM Service Providers Information on first-strike scientific monitoring priorities OSM arrangements and capability Permitting and access requirements for OSM	

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Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Tactical Response Plans	Provides options for response techniques in selected RPAs. Provides site, access and deployment information to support a response at the location.	CIMT: Planning Section to help develop IAPs, and Logistics Section to assist with determining resources required.	Indicative response techniques. Access requirements and/or permissions. Relevant information for undertaking a response at that site. Where applicable, may include equipment deployment locations and site layouts.	For full list of relevant Tactical Plans for the Goodwyn Alpha Facility operations oil spill response, refer to ANNEX D: Tactical Response Plans (TRP)
Support Plans	Support Plans detail Woodside's approach to resourcing and the provision of services during a hydrocarbon spill response.	CIMT: Operations, Logistics and Planning Sections.	Technique for mobilising and managing additional resources outside of Woodside's immediate preparedness arrangements.	Logistics Support Plan Aviation Support Plan Marine Support Plan Waste Management Plan – Australia Health and Safety Support Plan Hydrocarbon Spill Responder Health Monitoring Guidelines People and Global Capability (Surge Labour Requirements) Support Plan Stakeholder Engagement Support Plan Guidance for Hydrocarbon Spill Claims Management

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2 RESPONSE PLANNING PROCESS

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. Figure 2-1 outlines the interaction between Woodside's response, planning, preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the Petroleum Activity.

The Goodwyn Alpha Facility Operations Oil Pollution First Strike Plan (FSP) then summarises the outcome of the response planning process and provides initial response guidance and a summary of ongoing response activities if an incident were to occur.

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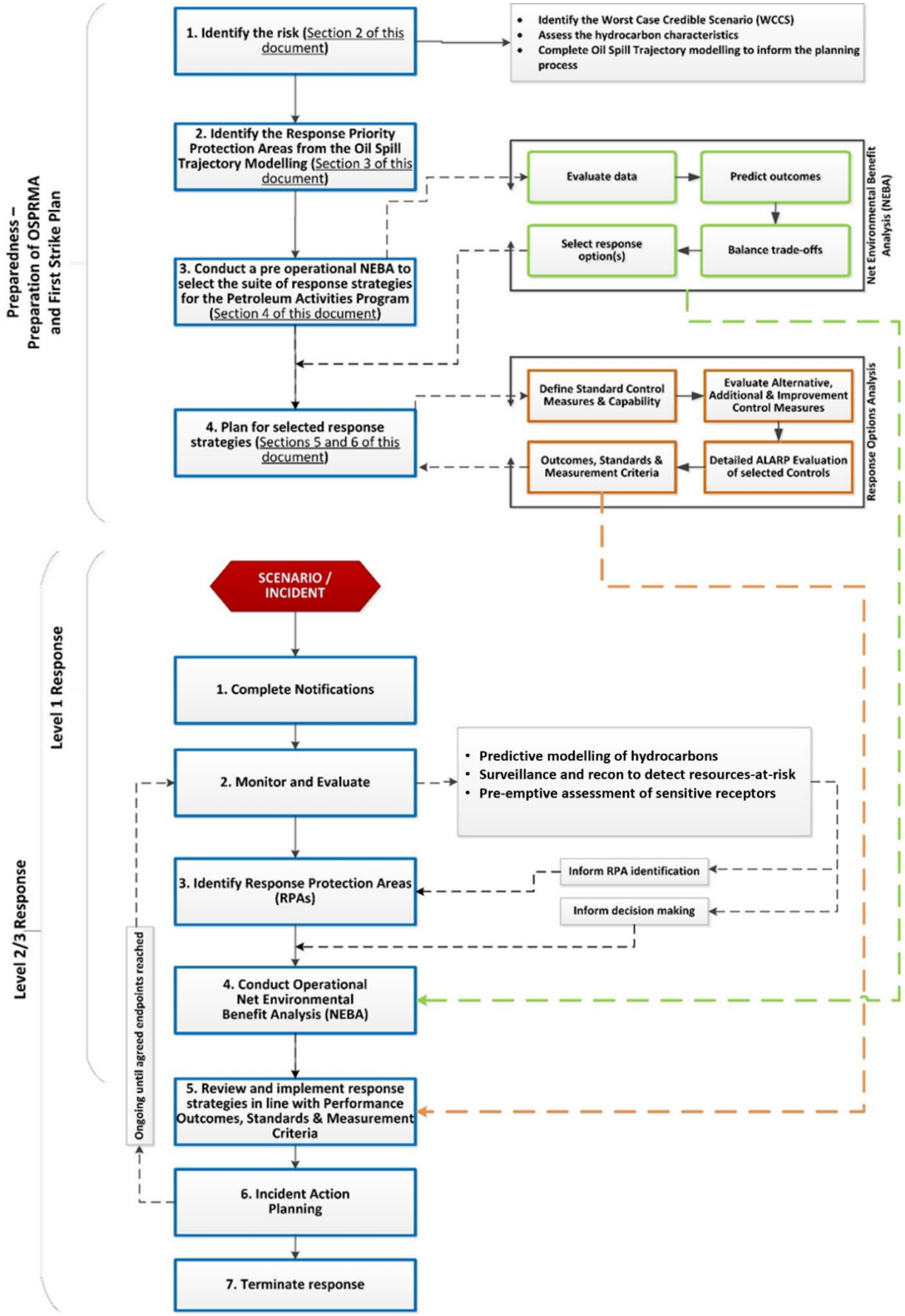


Figure 2-1: Response planning and selection process

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2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

- Section 1: Introduction
- Section 2: Response planning process
  - identification of worst-case credible scenario(s) (WCCS)
  - spill modelling for WCCS.
- Section 3: Identify response protection areas (RPAs)
  - areas predicted to be contacted at concentration >100 g/m^2.
- Section 4: Net environmental benefit analysis (NEBA)
  - pre-operational NEBA (during planning/ALARP evaluation): this must be reviewed during the initial response to an incident to confirm its accuracy
  - selected response techniques prioritised and carried forward for ALARP assessment.
- Section 5: Hydrocarbon spill ALARP process
  - determines the response need based on predicted consequence parameters.
  - details the environmental performance of the selected response options based on need.
  - sets the environmental performance outcomes, environmental performance standards and measurement criteria.
- Section 6: ALARP evaluation
  - evaluates alternative, additional, and improved options for each response technique to demonstrate the risk has been reduced to ALARP.
  - provides a detailed ALARP assessment of selected control measure options against:
    - predicted cost associated with implementing the option
    - predicted change to environmental benefit
    - predicted effectiveness / feasibility of the control measure.
- Section 7: Environmental risk assessment of selected response techniques
  - evaluation of impacts and risks from implementing selected response options.
- Section 8: ALARP conclusion
- Section 9: Acceptability conclusion

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2.1.1 Response planning assumptions

Figure 2-2 illustrates the initial steps of a response to an oil spill event and, where available, the indicative timing. For the latter stages, the timing will be specific to the selective response option.

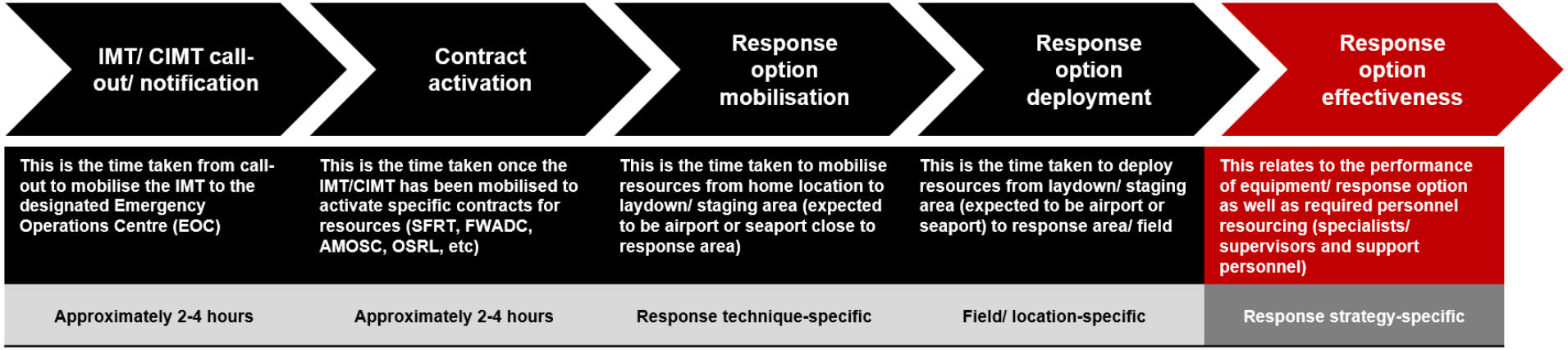


Figure 2-2: Response planning assumption – timing, resourcing and effectiveness

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2.2 Environment Plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the Petroleum Activity have been identified during the risk assessment process (Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6.8 of the EP. Six MEEs, which includes 8 credible spill scenarios for the Petroleum Activity, have been selected as representative across types, sources and incident/response levels, up to and including the WCCS.

Table 2-1 presents the credible scenarios for the Petroleum Activity. The WCCSs for the activity are then used for response planning purposes, as all other scenarios are of a lesser scale and extent. By demonstrating capability to manage the response to the WCCSs, Woodside assumes other scenarios that are smaller in nature and scale can also be managed by the same capability. Response performance measures have been defined based on a response to the WCCSs.

The loss of well containment scenarios (MEE-01 Scenario-01, MEE-01 Scenario-02) have been modelled and are considered to determine the WCCS for response planning purposes. The instantaneous release after a loss of marine vessel separation or vessel collision (MEE-05 Scenario-08) has also been considered, given the large instantaneous volume and the surface release.

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Table 2-1: Petroleum Activity credible spill scenarios

Credible Spill Scenarios	Scenario selected for planning purposes	Scenario description	Maximum credible volume released (liquid m^3)[1]	Incident level	Hydrocarbon type	Residual proportion	Residual volume (m^3)
MEE-01 Scenario-01 (WCCS)	Yes	Well blowout: hydrocarbon release caused by well loss of containment (subsea)	300,985 m^3 over 76 days	3	Yodel-3 Condensate	2.5%	7,524.62 m^3
MEE-01 Scenario-02 (WCCS)	Yes	Well blowout: hydrocarbon release caused by well loss of containment (surface)	171,033 m^3 over 68 days	3	GWA-03 Condensate	1.6%	2,736.53 m^3
MEE-02 Scenario-03	No	Subsea Loss of Containment: flowlines (GWF-1/ GWF-2) subsea release outboard of SSIV	799.7 m^3 (< 6 hours)	3	GWF4 Rich Fluid (GWF condensate)	8%	63.98 m^3
MEE-02 Scenario-04	No	Subsea Loss of Containment: Subsea release from IFL (including 2TL inventory) downstream of SSIV but within 500 m of GWA facility	8,090 m^3 (< 6 hours)	3	GWA condensate	0.8%	64.72 m^3
MEE-02 Scenario-05	No	Subsea Loss of Containment: Surface release from IFL (including 2TL inventory) from rupture of riser at GWA facility	7,623 m^3 (< 6 hours)	3	GWA Condensate	0.8%	60.98 m^3
MEE-03 Scenario-06	No	Topside loss of containment: Instantaneous release from the GWA facility.	135 m^3	2	Gas and GWA Condensate	Up to 0.8%	Up to 1.08 m^3
			403 m^3		GWA condensate	0.8	3.22 m^3
			343 m^3		MDO	5.0%	1.72 m^3
Scenario-07	No	Marine fuel loss during hydrocarbon bunkering	24 m^3 over 15 minutes	2	MDO	5.0%	1.5 m^3
MEE-05 Scenario-08	Yes	Instantaneous release after a loss of marine vessel separation or vessel collision	1,000 m^3	3	MDO	5.0%	50 m^3

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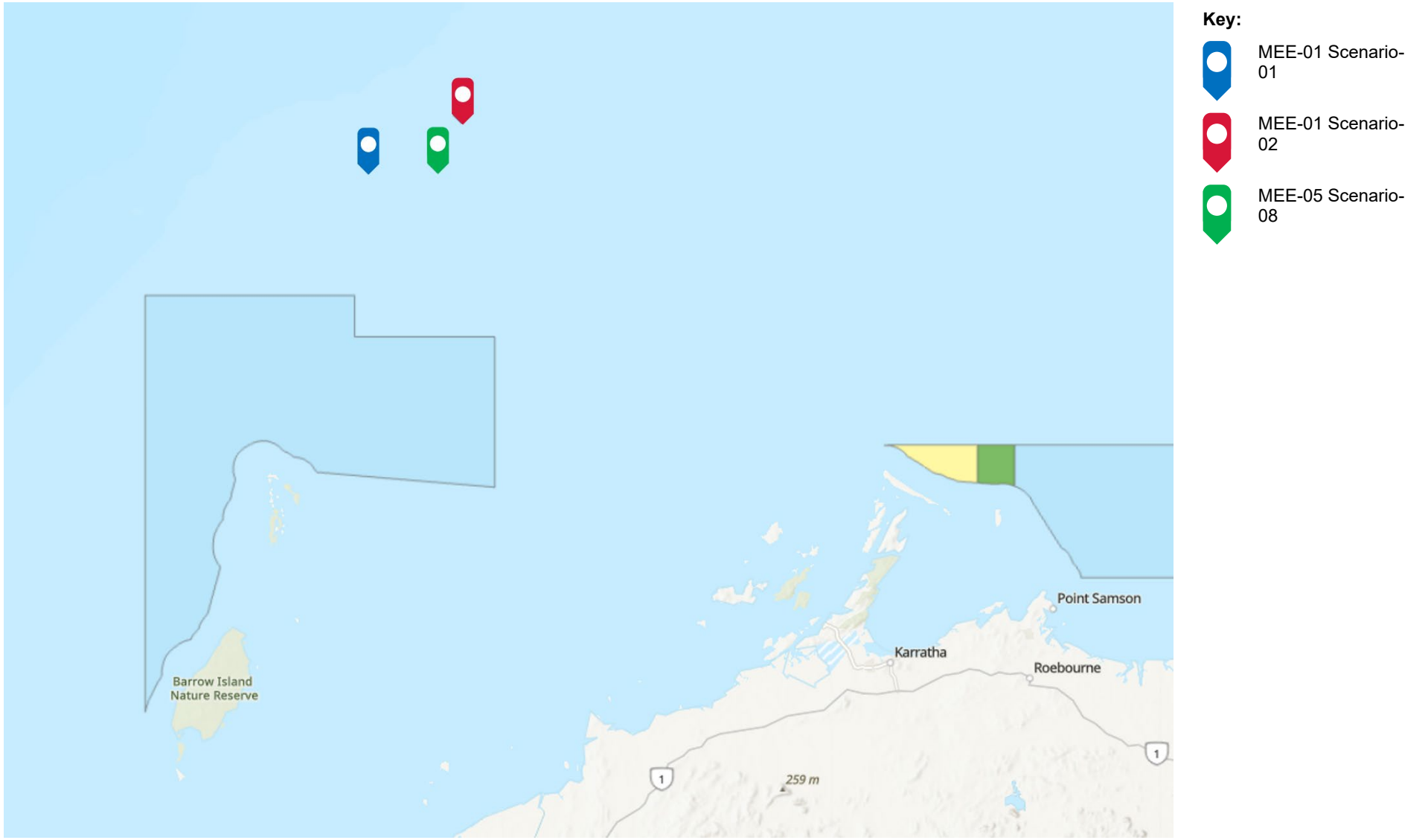


Figure 2-3: Location of MEE-01 Scenario-01, MEE-01 Scenario-02 and MEE-05 Scenario-08

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2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6.8.2.2 of the EP.

Yodel-3 Condensate (MEE-01 Scenario-01)

Yodel-3 Condensate (API 54.4) contains a low proportion (2.5% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures (residual). These compounds will persist in the marine environment; however, most of the hydrocarbons that comprise this oil (97.5%) will volatilise at ambient temperatures.

The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which would begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 63.1% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 25.3% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 9.1% should evaporate over several days (265 °C < BP < 380 °C).

The unweathered hydrocarbon mixture has low density (0.76 g/cm^3) and very low dynamic viscosity (0.54 cP). The pour point of the whole mixture (< -36 °C) indicates that it will remain in a liquid state over the annual temperature range observed on the North West Shelf.

Selective evaporation of the lower boiling-point components will lead to a shift in the physical properties of the remaining mixture, including an increase in the density, viscosity and pour point. Given the low density, viscosity and pour point of the mixture, it is expected that even after weathering the hydrocarbon mixture will not solidify and will remain less dense than seawater.

The whole oil has low asphaltene content (< 0.1%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle. The whole oil also contains ~ 5% wax, therefore there is potential for residual hydrocarbons to be found as wax in the marine environment if this oil is spilled.

Soluble aromatic hydrocarbons contribute approximately 8.7% by mass of the whole oil, mostly in the C11-C20 range of hydrocarbons. These compounds would evaporate slowly if exposed to the atmosphere, leaving the potential for dissolution of a proportion of them into the water column.

The results for the constant-wind case indicate that Yodel-3 Condensate will have a tendency to evaporate fairly rapidly, with 88% of the spilled volume predicted to evaporate and around 10% remaining on the water surface after the first 24 hours under light winds. Negligible levels of entrainment and dissolution are expected under these light wind conditions.

A slightly reduced evaporation rate is predicted in the first 24 hours for the variable-wind case. Increased entrainment and dissolution rates are predicted in this case, with a corresponding decrease in the floating oil proportion to negligible levels. The variable-wind case also indicates that, once entrained, the oil tends to remain in the water column and may not resurface even during calm wind periods.

GWA-03 Condensate (MEE-01 Scenario-02)

GWA-03 Condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 71.6% of the oil mass should evaporate within the first 12 hours; a further 19.8% should evaporate within the first 24 hours; and a further 7.0% should evaporate over several days. Only about 1.6% of the oil is shown to be persistent (RPS Group 2021).

The whole oil has a low asphaltene content (< 0.5%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle.

Soluble, aromatic, hydrocarbons contribute approximately 13.2% by mass of the whole oil. Around 9.6% by mass is highly soluble and highly volatile. A further 3.6% by mass has semi-to-low volatility. These compounds dissolve more slowly but tend to persist in soluble form for longer. Discharge onto the water surface will favour the process of evaporation over dissolution under calm sea conditions, but increased entrainment of oil and dissolution of soluble compounds can be expected under breaking wave conditions (RPS Group 2021).

The mass balance forecast for the constant-wind case for GWA-03 Condensate shows that about 91.4% of the oil is predicted to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with

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higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.

GWF4 Rich Fluid (GWF Condensate) (MEE-02 Scenario-03)

The GWF Condensate is made of high proportions of highly volatile hydrocarbons. In general, about 62 % of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 20 % should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 10% should evaporate over several days (265 °C < BP < 380 °C). Approximately 8% of the oil is shown to be persistent. The aromatic content of the oil is approximately 17.1 %.

If released in the marine environment and in contact with the atmosphere (i.e., surface spill), approximately 82 % by mass of this oil is predicted to evaporate over the first couple of days depending upon the prevailing conditions, with further evaporation slowing over time. The heavier (low volatility) components of the oil tend to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction. Further, the GWF Condensate contains 8% of heavy hydrocarbons (persistent compounds) that are likely to remain on the sea surface for longer periods.

The mass balance forecast for the constant-wind case for GWF Condensate shows that approximately 82% of the oil is predicted to evaporate within 24 hours. Under these calm conditions, most of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes.

Under the variable-wind case, where the winds are of greater strength, entrainment of GWF Condensate into the water column is indicated to be greater than the constant wind case. Approximately 24 hours after the spill, around 20% of the oil mass is forecast to have entrained and 73% is forecast to have evaporated. The increased level of entrainment in the variable-wind case will result in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 1% per day with an accumulated total of ~ 7% after 7 days, in comparison to a rate of ~ 0.13% per day and an accumulated total of 0.88% after 7 days in the constant wind case.

GWA Condensate (MEE-02 Scenario-04 and Scenario-05, and MEE-03 Scenario-06)

GWA Condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi-volatile components. In favourable evaporation conditions, about 65.9% of the oil mass should evaporate within the first 12 hours, a further 22.5% should evaporate within the first 24 hours and a further 10.8% should evaporate over several days. About 0.8% of the oil is shown to be persistent (RPS Group 2021).

The whole oil has a low asphaltene content (<0.5%), indicating a low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle.

Soluble, aromatic, hydrocarbons contribute approximately 16.3% by mass of the whole oil. About 9.1% by mass is highly soluble and highly volatile. A further 7.2% by mass has semi-to-low volatility. These compounds dissolve more slowly but tend to persist in soluble form for longer. Discharge onto the water surface will favour the process of evaporation over dissolution under calm sea conditions, but increased entrainment of oil and dissolution of soluble compounds can be expected under breaking wave conditions (RPS Group 2021).

The mass balance forecast for the constant-wind case for GWA Condensate shows that about 88.4% of the oil is predicted to evaporate within 24 hours. Under calm conditions, the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes (RPS Group 2021).

Marine Diesel Oil (MEE-03 Scenario-06, Scenario-07 and MEE-05 Scenario-08)

MDO is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. In general, about 6% of the oil mass should evaporate within the first 12 hours (boiling point < 180°C); a further 35% should evaporate within the first 24 hours (180°C < boiling point < 265°C); and a further 54% should evaporate over several days (265°C < boiling point < 380°C). About 5% of the oil is shown to be persistent. The aromatic content of the oil is about 3%.

The mass balance forecast for the constant-wind case for MDO shows that about 41% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface

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weathers at a slower rate due to comprising the longer-chain compounds with higher boiling points. Evaporation of the residual compounds slows significantly and is then subject to more gradual decay through biological and photochemical processes.

Under the more realistic variable-wind case, where the winds are of greater strength, entrainment of MDO into the water column is indicated to be significant. About 24 hours after the spill, around 72% of the oil mass is forecast to have entrained and a further 24% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds tend to remain entrained beneath the surface under conditions that generate wind waves (about >6 m/s).

The increased level of entrainment in the variable-wind case results in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 2.4% per day with an accumulated total of ~16% after seven days, in comparison to a rate of ~0.2% per day and an accumulated total of 1.3% after seven days in the constant-wind case. Given the large proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons decay and/or evaporate over time scales of several weeks to a few months. This long weathering duration extends the area of potential effect.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling (OSTM) tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are both used for stochastic and deterministic trajectory modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic damage that was also used under the United States Oil Pollution Act 1990 Natural Resource Damage Assessment (NRDA) regulations. Notable spills where the model has been used and validated against actual field observations include, Exxon Valdez (French McCay 2004), North Cape Oil Spill (French McCay 2003), along with an assessment of 20 other spills (French McCay and Rowe, 2004). In addition, test spills designed to verify fate, weathering and movement algorithms have been conducted regularly and in a range of climate conditions (French and Rines 1997; French et al. 1997; Payne et al. 2007; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the NRDA (Spaulding et al. 2015; French McCay et al. 2015, 2016). Finally, the OILMAP and SIMAP models have been used extensively in Australia to prosecute pollution offences, predict discharge locations and likely spill volumes based on weathering and surveillance observations, and has been used as expert witness evidence in Australian court proceedings, aiding the prosecution to determine spill quantum estimates.

2.3.1 Stochastic modelling

Quantitative, stochastic assessments have been undertaken for the credible spill scenarios (refer to Table 2-1) to help assess the environmental consequences of a hydrocarbon spill.

A total of 100 replicate simulations were completed for each of the scenarios to test trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter (25 simulations per quarter). Further details relating to the assessments for the scenarios can be found in Section 6 of the EP.

2.3.1.1 Environmental impact thresholds – Environment that May Be Affected (EMBA) and hydrocarbon exposure

The outputs of the stochastic spill modelling are used to assess the potential environmental impact from the credible scenarios. The stochastic modelling results are used to delineate areas of the marine and shoreline environment that could be exposed to hydrocarbon levels exceeding environmental impact threshold

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concentrations. The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the EMBA and is discussed further in Section 6 of the EP. As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each fate within the EP.

A conservative approach – adopting accepted accumulation thresholds for impacts on the marine environment – is used to define the EMBA. These hydrocarbon thresholds are presented in Table 2-2 below and described in Section 6 of the EP.

Table 2-2: Summary of thresholds applied to the stochastic hydrocarbon spill modelling to determine the EMBA and inform operational and scientific monitoring

Hydrocarbon	Surface hydrocarbon (g/m^2)	Dissolved hydrocarbon (ppb)	Entrained hydrocarbon (ppb)	Accumulated hydrocarbon (g/m^2)
EMBA				
Condensate	1	10	1,000	10
Diesel	1	10	1,000	10
Operational and scientific monitoring (OSM) assessment (see ANNEX C)				
All hydrocarbon types	1	10	10	10

2.3.2 Deterministic modelling

Response planning

Woodside uses deterministic modelling to evaluate risks and impacts and response capability requirements. For planning and scaling the clean-up element of the response, deterministic modelling is undertaken where initial stochastic modelling has indicated that hydrocarbons are present at the minimum feasible clean-up thresholds of >50 g/m^2 (for floating hydrocarbons) and/or >100 g/m^2 (for shoreline accumulations), and where such shoreline contact is predicted at multiple locations. The deterministic modelling outputs are then used to scale the required capability for the offshore (surface dispersant and containment and recovery) and/or shoreline responses.

Deterministic results are provided in both shapefile and data table format with each row of the data table representing a 1 km^2 cell. This cell size has been used as it represents the approximate area that a single containment and recovery operation or surface dispersant operation (single sortie or vessel spraying) can effectively treat in one ten-hour day. Smaller cell sizes have been considered but would not change the response need as the potential distance between cells would not allow multiple cells to be treated per day by response operations. Additionally, a 1 km^2 cell is expected to allow averaging of threshold concentrations and mass across the spatial extent to represent a conservative approach (patches of oil and windrows) to response planning that simulates feedback from monitor and evaluate activities in a real event.

Deterministic modelling was carried out on MEE-01 Scenario-02 as the WCCSs and used for response planning purposes. A sample of the deterministic results is provided below as an indication of the data format and content.

- Column A and B provide the latitude and longitude of the cell
- Column C is the elapsed time since the release occurred
- Column D represents the average concentration across the cell in g/m^2
- Column E represents the viscosity of the hydrocarbon in centistokes (cSt) at sea surface temperature
- Columns F and G represent the mass of hydrocarbon across the entire cell in kg and m^3 respectively.

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Table 2-3: Example Deterministic modelling data

Latitude	Longitude	Time_hour	Conc_gm²	Visc_cSt	Mass_kg	Mass_
A	B	C	D	E	F	G
-19.657033	115.929029	6	29.578148	1.222765	29660.828114	29.660828
-19.648000	115.929029	6	1.879379	12.017308	1884.740233	1.884740
-19.657033	115.929029	12	22.487072	0.764680	22549.930364	22.549930
-19.648000	115.929029	12	2.592590	8.125653	2599.985957	2.599986
-19.657033	115.929029	18	27.117618	1.286506	27193.420231	27.193420
-19.648000	115.919473	24	2.861783	34.524643	2869.949754	2.869950
-19.638968	115.919473	24	1.075811	40.968575	1078.943342	1.078943

The deterministic modelling data provides an indication of the response need by displaying the potential surface area and volume treated or recovered by response operations. Existing capability is reviewed to approximate the surface area and volumes that can be treated or removed and a range of alternate, improved and additional options to reduce risks and impacts to ALARP are considered.

A key consideration in the evaluation of response capability is the understanding that no single response strategy or even combination of offshore response strategies will treat or remove 100% of the surface hydrocarbons in either surface area or volume. Even with the significant resources available to Woodside through existing capability and third-party resources, the primary offshore response strategies of surface dispersant application and containment and recovery will only treat or recover a minor volume (<30%) of the available surface hydrocarbons based on previous response experience.

Operational and Scientific Monitoring

Deterministic modelling for planning Operational and Scientific Monitoring (OSM) activities is undertaken where stochastic modelling predicts that the existing response capability to resource monitoring at receptors forecast to be contacted by floating, shoreline and/or dissolved hydrocarbons (at >10% probability and within the initial 14 days), has been exceeded. Deterministic modelling undertaken for planning OSM activities for this Petroleum Activity is detailed in Annex C.

Woodside is committed to a realistic, scalable response capability commensurate to the level of risk and able to be practically implemented and feasibly sustained.

2.3.3 Response planning thresholds for surface and shoreline hydrocarbon exposure

Thresholds to determine the EMBA and inform OSM are used to predict and assess environmental impacts, however they do not appropriately represent the thresholds at which an effective clean-up response can be implemented.

Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. Deterministic modelling is then used to assess the nature and scale of a response. These thresholds are provided as a guide for response planning based on case studies that have demonstrated some response strategies (e.g. containment and recovery, chemical dispersant application) require certain oil spill thicknesses and conditions to be effective.

Response planning thresholds assist with understanding worst-case spill scenario response strategy capability requirements when used in conjunction with oil spill trajectory modelling results. Modelling informs the predicted spatial extent of the spill at certain response thresholds, which in turn can inform response strategy capability.

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2.3.3.1 Surface hydrocarbon concentrations

Table 2-4: Surface hydrocarbon thresholds for response planning

Surface hydrocarbon threshold (g/m^2)	Description	Bonn Agreement Oil Appearance Code	Mass per area (m^3/km^2)
>10	Predicted minimum threshold for commencing monitor and evaluate[3]	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [4]	Code 4 – Discontinuous true oil colour	50 to 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon threshold (g/m^2)	**Description**	**National Plan Guidance on Oil Contaminated Foreshores**	**Mass per area (m^3/km^2)**
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations	Stain	>100
250	Predicted minimum threshold for commencing shoreline clean-up operations	Level 3 – Thin Coating	200 to 1000

The surface thickness of oil at which dispersants are typically effective is approximately 100 g/m^2. However, substantial variations occur in the thickness of the oil within the slick, and most fresh crude oils spread within a few hours, so overall the average thickness is 0.1 mm (or approx. 100 g/m^2 ITOPF 2011). Additionally, the recommended rate of application for surface dispersant is typically one part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to calculate a litres/hectare application rate from vessels and aircraft. In practice this can be difficult to achieve as it is not possible to accurately assess the thickness of the floating oil.

Some degree of localised over-dosage and under-dosage is inevitable in dispersant response. An average oil layer thickness of 0.1 mm is often assumed, although the actual thickness can vary over a wide range (from less than 0.0001 mm to more than 1 mm) over short distances (International Petroleum Industry Environment Conservation Association [IPIECA] 2015).

Guidance from the Australian Maritime Safety Authority (AMSA 2020) indicates spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant.

3 Monitor and evaluate will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and control of the incident passes to statutory authorities e.g. Western Australia Department of Transport and Major Infrastructure (WA DTMI) or AMSA.

4 At 50 g/m^2, containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and containing the spread of surface oil.

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Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from the National Oceanic and Atmospheric Administration (NOAA) in the United States is found in the document: Characteristics of Response Strategies: A Guide for Spill Response Planning in Marine Environments 2013 (NOAA 2013). This guide outlines advice for response planning across all common techniques, including surface dispersant spraying and containment and recovery. It states oil thickness can vary by orders of magnitude within distinct areas of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Further to this, ITOPF also states in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014a, 2014b).

Figure 2-4 below from AMSA's Identification of Oil on Water – Aerial Observation and Identification Guide (AMSA, 2014) shows expected percent coverage of surface hydrocarbons as a proportion of total surface area. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

From this information and other relevant sources (Allen and Dale, 1996, EMSA, 2012, Spence, 2018) the surface threshold of 50 g/m2 was chosen as an average/equilibrium thickness for offshore response operations (50 g/m2 is an average of 50% coverage of 0.1 mm Bonn Agreement Code 4 – discontinuous true oil colour, or 25% coverage of 0.2 mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows).

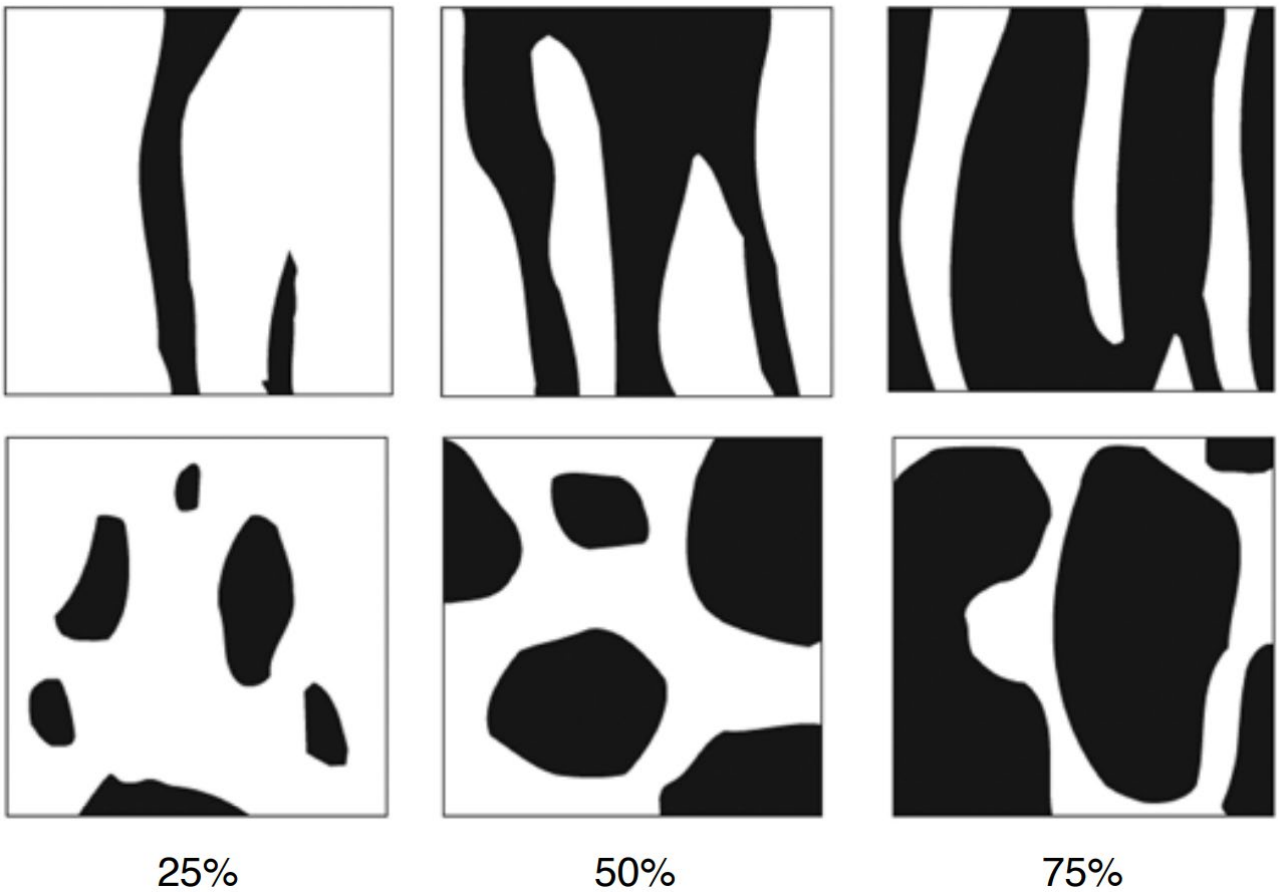


Figure 2-4: Proportion of total area coverage (AMSA, 2014)

Figure 2-5 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

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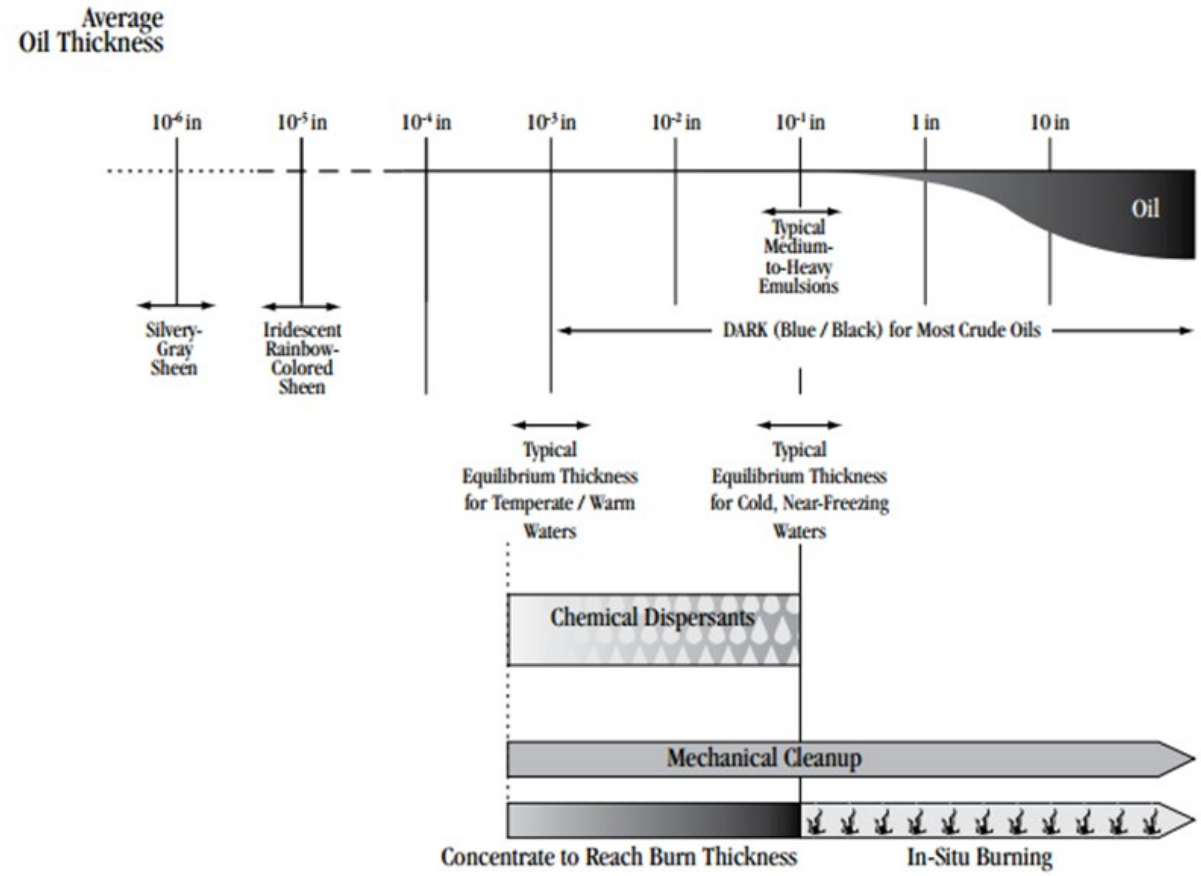


Figure 2-5: Oil thickness versus potential response options (from Allen & Dale 1996)

Wind and wave influence on the feasibility of response operations are also considered below (adapted from NOAA 2013):

- Mechanical clean-up: effectiveness drops significantly because of entrainment and/or splash-over as short period waves develop beyond 2–3 ft. (0.6–0.9m) in height. The ability to contain and recover oil decreases rapidly as the slick thickness becomes less than a thousandth of an inch (0.025 mm) (i.e., very low oil encounter rates). Waves and wind can also be limiting factors for the safe operation of vessels and aircraft.
- Dispersants: effective dispersion requires a threshold amount of surface mixing energy (typically a few knots of wind and a light chop) to be effective. At higher wind and sea conditions, dispersant evaporation and wind-drift will limit chemical dispersion application effectiveness; and, there is a point (~25-kt winds, 10-ft waves) where natural dispersion forces become greater, particularly for light oils. Because of droplet size versus slick thickness constraints and application dose-rate limitations, dispersants work best on slick thicknesses of a few thousandths (approx. 50 g/m2) to hundredths of an inch (approx. 250 g/m2). Improved dispersants, higher dose rates, and multiple-pass techniques may extend the thickness limitation to 0.1 inch (2.5 mm) or more.

As offshore response operations (surface dispersant and containment and recovery) are intended to be undertaken at the thickest part of the slick, 50 g/m^2 and 100 g/m^2 (aligning with the lower limit of BAOAC 4 and midpoint of BAOAC 5) have been utilised by Woodside in deterministic modelling to identify the most likely locations for surface dispersant application and containment and recovery operations.

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2.3.3.2 Surface hydrocarbon viscosity

Table 2-5: Surface hydrocarbon viscosity thresholds

Surface viscosity threshold (cSt)	Description	European Maritime Safety Authority (EMSA)	Viscosity at sea temperature (cSt)
5,000*	Predicted optimum viscosity for surface dispersant operations	Generally possible to disperse	500-5,000
10,000*	Predicted maximum viscosity for effective surface dispersant operations	Sometimes possible to disperse	5,000-10,000

*Measured at sea surface temperature

Further to the required thickness for surface dispersant application and containment and recovery to be deployed effectively as outlined above, changes to viscosity will also limit the treatment of offshore response techniques. As outlined in the EMSA Manual on the Applicability of Oil Spill Dispersants (EMSA, 2012), guidance around changes to viscosity and likely effectiveness of surface dispersant application is provided.

This includes the following statements: “It has been known for many years that it is more difficult to disperse a high viscosity oil than a low or medium viscosity oil. Laboratory testing had shown that the effectiveness of dispersants is related to oil viscosity, being highest for modern ‘Concentrate, UK Type 2/3’ dispersants at an oil viscosity of about 1,000 or 2,000 mPa (1,000 – 2,000 cSt) and then declining to a low level with an oil viscosity of 10,000 mPa (10,000 cSt). It was considered that some generally applicable viscosity limit, such as 2,000 or 5,000 mPa (2,000 – 5,000 cSt), could be applied to all oils.”

However, modern oil spill dispersants are generally effective up to an oil viscosity of 5,000 mPa (5,000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 10,000 cSt are in most cases, no longer dispersible. Guidance from CEDRE (EMSA, 2012) also indicates products with a range of 500 – 5,000 cSt at sea temperature are generally possible to disperse, while 5,000 – 10,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 10,000 cSt at sea temperature below pour point are generally impossible to disperse.

To support decision making and response planning, a threshold of 10,000 cSt at sea temperature was chosen as a conservative estimate of maximum viscosity for surface dispersant spraying operations.

The thresholds described above are compared with the modelling results for the WCCS (Table 2-6).

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2.3.4 Spill modelling results

Details of the scenario and modelling inputs are included along with modelling results in Table 2-6.

Table 2-6: Worst case credible scenario modelling results

Scenario description	Results		
	MEE-01 Scenario-01	**MEE-01 Scenario-02**	**MEE-05 Scenario-08**
WCCS – total volume released Refer to Section 2.1.1 for detailed hydrocarbon characteristics	Hydrocarbon release caused by loss of well containment subsea in 132 m water depth 300,985 m^3 of Yodel condensate over 76 days	Hydrocarbon release caused by loss of well containment surface 171,033 m^3 of GWA-03 condensate over 68 days	Hydrocarbon release caused by a loss of marine vessel separation or vessel collision Instantaneous surface release of 1,000m^3 of MDO
WCCS – residual volume remaining post-weathering	2.5% residue or 7,524.62 m^3 99 m^3 per day	1.6% residue or 2,736.53 m^3 40 m^3 per day	5.0% residue or 50 m^3
Location	19° 45' 4.365" S, 115° 43' 44.79" E	19° 39' 12.809" S, 115° 55' 42.567" E	19° 45' 10.681" S, 115° 52' 42.898" E
Modelling results			
Surface area of hydrocarbons (>50 g/m^2)	Area data not available from stochastic modelling – floating oil at 50 g/m^2 extends up to 10 km from the release location and is present at Rankin Bank (9.46 days)	1 km^2 on day 3 2 km^2 on day 4 1 km^2 on day 5 Surface hydrocarbons return to 0 km^2 (0 m^3) thereafter. (Q2, Run 15)	Area data not available from stochastic modelling – floating oil at 50 g/m^2 extends up to 30 km from the release location. No contact at any RPA.
Surface area of hydrocarbons (>50 g/m^2 and <10,000 cSt)		1 km^2 on day 3 2 km^2 on day 4 1 km^2 on day 5 Surface hydrocarbons return to 0 km^2 (0 m^3) thereafter. Floating hydrocarbons are not predicted to exceed 10,000 cSt (Q2, Run 15)	
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a concentration of 10 g/m^2)	7 hours at Rankin Bank	Floating oil at 10 g/m^2 extends up to 20 km from the release location. No contact at any RPA.	Floating oil at 10 g/m^2 extends up to 54 km from the release location. No contact at any RPA.
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a concentration of 100 g/m^2)	NA – No shoreline contact at 100 g/m^2	Muiron Islands – 71.4 days (6 m^3) (Q2, Run 2)	NA – No shoreline contact at 100 g/m^2
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor (at a concentration of 100 g/m^2).	NA – No shoreline contact at 100 g/m^2	Muiron Islands – 6 m^3 (71.4 days) (Q2, Run 2)	NA – No shoreline contact at 100 g/m^2
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (at a concentration of 100 g/m^2)	NA – No shoreline contact at 100 g/m^2	Muiron Islands – 6 m^3 (71.4 days) (Q2, Run 2)	NA – No shoreline contact at 100 g/m^2
Minimum time to dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 10 ppb)	7 hours at Rankin Bank	Data not available	18 hours at Rankin Bank
The full list of response protection areas (RPAs) predicted from modelling is available in Table 3-1. Locations prioritised for operational and scientific monitoring are detailed in ANNEX C.			

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From the above modelling results, MEE-01 Scenario 2 is considered to be the WCCS and has been used as the basis for assessing and scaling response planning in Section 4.5. The other scenarios may also be considered if feasibility of response techniques differs. Modelling predicts the following:

- Surface hydrocarbon concentrations >10 g/m^2 may extend up to a maximum of 99 km from the release location (MEE-01 Scenario-01), 20 km (MEE-01 Scenario-02), and 54 km (MEE-05 Scenario-08).
- Surface >50 g/m^2 (the minimum feasible threshold for surface dispersant application and containment and recovery) is predicted at Rankin Bank at a probability of 2% for MEE-01 Scenario-01. For MEE-01 Scenario-02, this threshold is limited to within 1 km of the release location and does not contact any RPA. MEE-05 Scenario-08 also predicts contact at this threshold within 30 km of the release location; however, surface dispersant application and containment and recovery are not considered appropriate for spills of MDO.
- Shoreline accumulation ≥100 g/m^2 is predicted to occur at Muiron Islands only (71.4 days) at a probability of 2% (MEE-01 Scenario-02).
- Response operations cannot be implemented if the safety of response personnel cannot be guaranteed. Safety circumstances that limit the execution of this control measure include volatile concentrations of hydrocarbons in the atmosphere, high winds (>20 knots), waves and/or sea states (>1.5m waves) and high ambient temperatures.

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3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, monitor and evaluate – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in Figure 3-1.

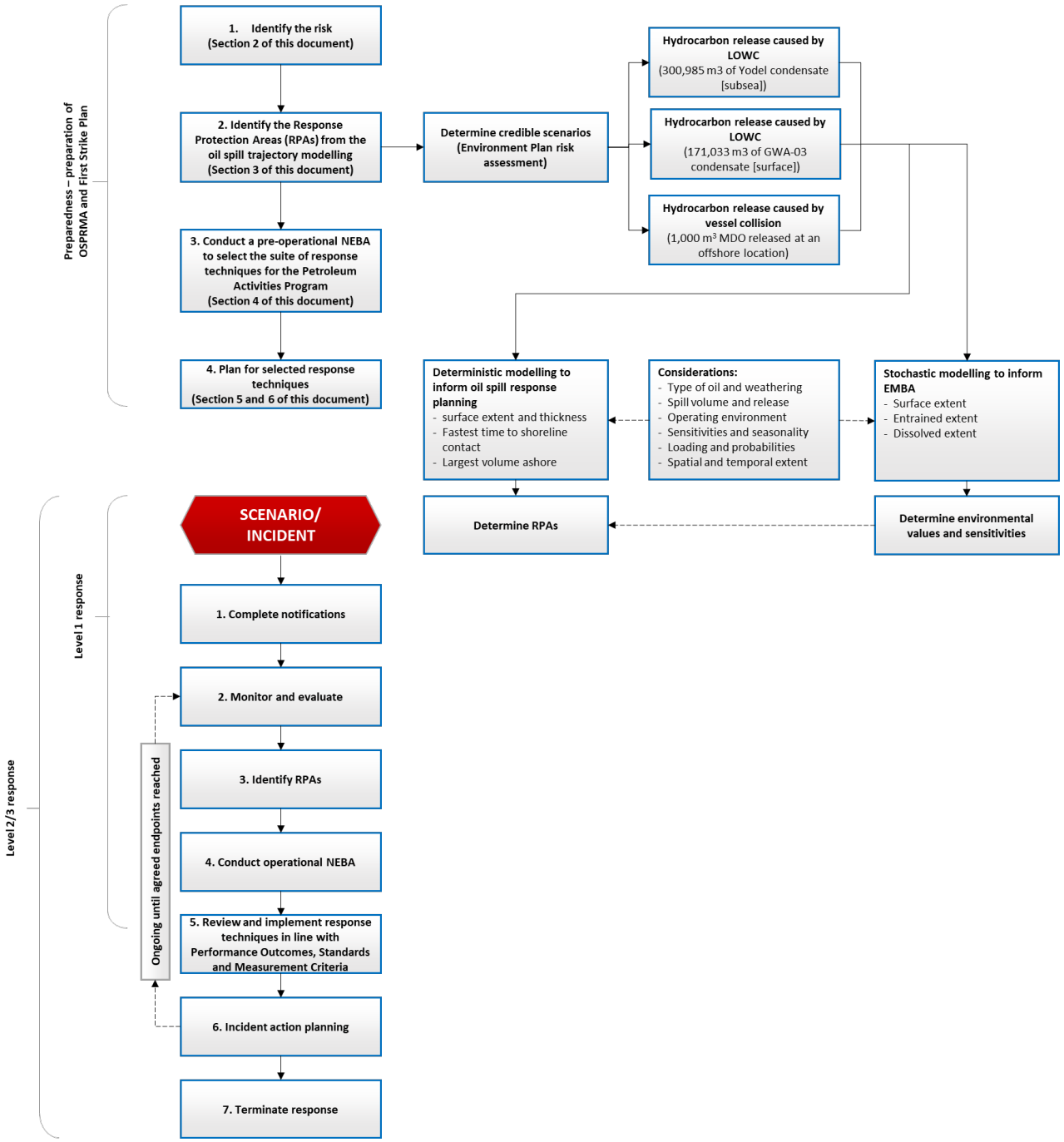


Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 6.8 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds

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- receptors within the EMBA which meet the following:
  - a number of priority protection criteria/categories
  - International Union of Conservation of Nature (IUCN) marine protected area categories
  - high conservation value habitat and species
  - important socio-economic/heritage value.

3.2 Identify Response Protection Areas (RPAs)

RPAs have been selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (Section 2.3.3). It is important to note that the figures outlined in Table 3-1 are the combined results of the individual worst-case runs and do not indicate a single worst case credible scenario (where the timings and volumes are all expected from one release).

From the identified sensitive receptors described in Section 6.8 of the EP, only those which a shoreline response could feasibly be conducted (accumulation > 100 g/m^2 for shoreline assessment and/or contact with surface slicks >10 g/m^2 for monitor and evaluate) have been selected for response planning purposes. While not discounting other sensitivities, these RPAs have been used as the basis for demonstrating the capability to respond to the nature and scale of a spill from the WCCS and prioritising response techniques.

Table 3-1 outlines locations which were identified from the modelling runs for the WCCS but does not constitute the full list of Priority Protection Areas (PPAs) potentially contacted from stochastic modelling (as per EMBA definition) (see Section 6.8 of the EP). Other PPA outliers were identified from the modelling and have been included in the assessment of capability in Sections 5 and 6.

Additional sensitive receptors are presented the existing environment description (Section 4 of the EP) and impact assessment section (Section 6.8 of the EP) for each respective spill scenario. The pre-operational NEBA (Section 4) considers the results from the stochastic modelling to allow consideration of all feasible response techniques are considered in the planning phase, therefore additional receptors are also included in the pre-operational NEBA.

The RPAs identified in Table 3-1 are used to plan for the nature and scale of a shoreline response.

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Table 3-1: Response Protection Areas (RPAs) from modelling

Response protection area	Conservation status	IUCN protection category	Minimum time to shoreline contact (above 100 g/m^2) in days [5]	Maximum shoreline accumulation (above 100 g/m^2) in m^3 [6]
Muiron Islands/ Muiron Islands MMA	Marine Management Area	IUCN VI – Protected area with sustainable use of natural resources IUCN IA – Strict Nature Reserve	71.4 days (6 m^3)	6 m^3 (71.4 days)

[5] This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore

[6] This volume and time represent the maximum volume ashore on defined shoreline polygon

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4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A Net Environmental Benefit Analysis (NEBA) is a structured process to consider which response techniques are likely to provide the greatest net environmental benefit.

The NEBA process is stage 3 of the preparedness process and typically involves four key steps outlined in Figure 4-1: evaluate data, predict outcomes, balance trade-offs, and select response options. These steps are followed both in the planning/ preparedness process and during a response.

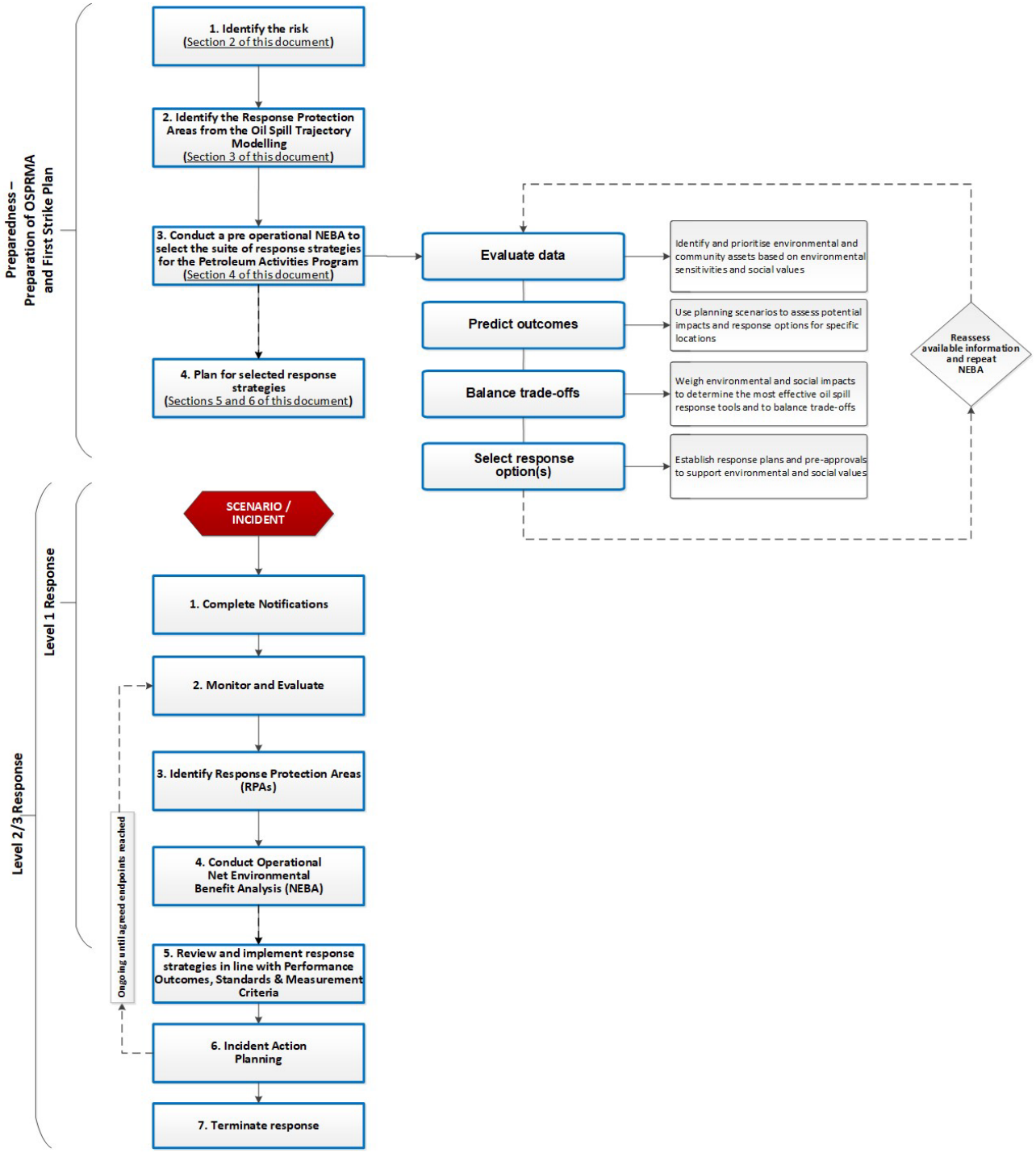


Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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4.1 Pre-operational / Strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (Section 2.3.3) and the surface concentrations (Section 2.3.3.1) from the deterministic modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this Petroleum Activity are contained in ANNEX A: Net Environmental Benefit Analysis detailed outcomes.

4.2 Stage 1: evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the Petroleum Activity activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. The WCCS is then selected for deterministic modelling and is used for this pre-operational NEBA. Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/effectiveness and scale of the response. Modelling results are available in Table 2-6 and Table 3-1.

4.3 Stage 2: predict outcomes

Woodside uses planning scenarios to assess potential impacts and response options for specific locations. Locations with potential environmental impacts, selected from the stochastic modelling are included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/ effectiveness of a response.

4.4 Stage 3: balance trade-offs

Woodside considers environmental impacts and response effectiveness/ feasibility to determine the most effective oil spill response tools and balance trade-offs, using an automated NEBA tool. The tool considers potential benefits and impacts associated with a response at sensitive receptors and then considers the effectiveness/ feasibility of the response to select the response techniques carried forward to the ALARP assessment. The NEBA can be found in ANNEX A: Net Environmental Benefit Analysis detailed outcomes.

4.5 Stage 4: select best response options

To select the response technique, all the other stages in the NEBA process are considered and used to establish response plans and any pre-approvals to support protection of identified environmental and social values.

The response techniques implemented may vary according to a particular spill. The hydrocarbon type released and the sensitivities of the receptors (both ecological and socio-economic) may influence the response. The pre-operational NEBA broadly evaluates each response technique and supports decisions on whether they are feasible and of net environmental benefit. Response techniques that are not feasible or beneficial are rejected at this stage and not progressed to planning.

Further risks and impacts from implementing these selected response options are outlined in Section 7.

4.5.1 Determining potential response options

The available response techniques based on current technology can be summarised under the following headings:

- monitor and evaluate

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- source control
  - remotely operated vehicle (rov) intervention
  - debris clearance and/or removal
  - capping stack
  - relief well drilling
- source control via vessel SOPEP
- subsea dispersant injection
- surface dispersant application:
  - aerial dispersant application
  - vessel dispersant application
- mechanical dispersion
- in-situ burning
- containment and recovery
- shoreline protection and deflection:
  - protection
  - deflection
- shoreline clean-up:
  - phase 1 – mechanical clean-up
  - phase 2 – manual clean-up
  - phase 3 – final polishing
- oiled wildlife response (including hazing)

Support functions may include:

- waste management
- operational and scientific monitoring

Table 4-1, Table 4-2 and Table 4-3 include scenario-specific assessments of feasible response options and justification for the exclusion of inappropriate options. These options are evaluated against the scenario parameters including oil type, volume, characteristics, prevailing weather conditions, logistical support, and resource availability to determine deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and different times during the response. The NEBA process assists in prioritising which options to use where and when, and timings throughout the response.

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Table 4-1: Response technique evaluation – Subsea Loss of Well Containment (MEE-01 Scenario-01)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Yodel-03 Condensate				
Monitor and evaluate	Will be effective in tracking the location of the spill, informing when it has entered State Waters, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. Pre-emptive assessment of sensitive receptors at risk – triggered once monitor and evaluate informs likely RPAs at risk.	Monitoring of a condensate spill is a feasible response technique and an essential element of all spill response incidents. Outputs will be used to guide decision making on the use of other monitoring/response techniques and providing required information to regulatory agencies including AMSA and Western Australia Department of Transport and Major Infrastructure (WA DTMI).	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via well intervention using ROV and hotstab	Controlling a loss of well containment at source via well intervention would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	In the event of the worst-case scenario with a loss of well containment during operations, well intervention via ROV would be attempted.	Yes	Source control intervention via ROV may be feasible (depending on local concentration of atmospheric volatiles) and would reduce quantity of hydrocarbons entering the marine environment.
Source control via debris clearance and capping stack	Controlling a loss of well containment at source via capping stack would be an effective way to limit the quantity of hydrocarbon entering the marine environment.	Woodside will have a source control emergency response plan (SCERP) that will cover the Petroleum Activity. Capping the Yodel Updip well (MEE-01 Scenario-01) is considered feasible based on worst-case discharge rates. Though all capping stack deployment technologies are unproven, in the event of a loss of well containment, and where deployment is feasible, the use of a proven subsea deployment method such as a heavy lift vessel, which is more commonly used in industry, is a more reliable and, in turn, ALARP approach. If environmental conditions permit (wind speed, wave height, current and plume radius), deployment of a capping stack would be attempted with a heavy lift vessel. Woodside maintains several frame agreements with various vessel service providers and maintains the ability to call off services with a capping stack and debris clearance agreement. The locations of suitable vessels for capping stack deployment are monitored monthly. Consideration to mobilise the capping stack from the supplier on a suitable vessel but then hand over to another vessel to conduct the capping activity will also be made to meet response time frames.	Yes	Conventional/ vertical capping stack deployment with a heavy lift vessel will be attempted at the discretion of the vessel master on the day, giving due regard to the safety of the vessel and crew. Circumstances that limit the safe execution of this control measure include lower explosive limit (LEL) concentrations, volatile concentrations of hydrocarbons in the atmosphere, weather window, waves and/or sea states and high ambient temperatures.
Source control via relief well drilling	A release of condensate will be over approximately 76 days. Relief well drilling is one of the primary options to stop the release.	For a spill from the Yodel Updip well (MEE-01 Scenario-01), relief well drilling will be a feasible means of stopping a loss of well containment event. Relief well drilling is a widely accepted and utilised technique.	Yes	Relief well drilling will be the main technique employed to control a loss of well containment event.
Subsea dispersant injection	Application of subsea dispersant may reduce the scale and extent of hydrocarbons reaching the surface and thus may reduce spill volumes contacting predicted RPAs. SSDI can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals and fish, which may be otherwise unaffected. Entrained oil plume likely to be increased resulting in greater spatial extent of entrained oil.	The goal of SSDI is to decrease the volume of oil that rises to the water surface to reduce exposure to floating hydrocarbons and minimise shoreline accumulations. Whilst modelling predicts hydrocarbons present at >50 g/m^2 threshold on the surface, this is temporally and spatially limited and, additionally, no shoreline accumulations are predicted. The use of SSDI would also not be required in order to deploy a capping stack and unnecessary use of SSDI would increase the complexity of SIMOPS operations around the wellhead.	No	The use of SSDI would potentially expose subsea organisms and habitats to increased dispersed and entrained hydrocarbon levels without providing a net environmental or safety benefit.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. It has the potential to reduce the magnitude, probability, extent, contact and accumulation of hydrocarbon on shorelines receptors when suitable encounter rates can be achieved. It also has the potential to reduce the magnitude and extent of contact with submerged receptors by removing oil before further natural entraining/dissolving of hydrocarbons occurs.	Modelling of a condensate spill from a subsea well loss of containment predicts that floating oil will be prone to rapid spreading and evaporation. Floating oil is predicted to meet the 50 g/m^2 minimum concentration required for containment and recovery at Rankin Bank (day 7) and thus may be feasible. Shoreline contact at >100 g/m^2 is not predicted at any RPA. Offshore metocean conditions may limit effectiveness of containment and recovery operations and corralling volatile hydrocarbons such as condensate may pose a risk to response personnel. If real-time monitor and evaluate techniques detect hydrocarbons at appropriate thresholds, metocean conditions are suitable, and the safety of	Potentially	If real-time monitor and evaluate techniques detect hydrocarbons at appropriate thresholds, metocean conditions are suitable, and the safety of response personnel can be guaranteed, containment and recovery may be an appropriate response option.

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		response personnel can be guaranteed, containment and recovery may be an appropriate response option.		
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	Surface dispersant application may potentially provide a net environmental benefit where its use would reduce the volume of shoreline oiling in sensitive regions. At certain times it may not provide an environmental benefit, for example, during coral spawning seasons due to coral larvae being highly sensitivity to dispersants (Negri et al, 2018). Whilst modelling predicts hydrocarbons present at >50 g/m^2 threshold on the surface (MEE-01 Scenario-01), this is temporally and spatially limited and, additionally, no shoreline accumulations are predicted for either LOWC scenarios. The use of surface dispersant would therefore potentially expose subsea organisms and habitats to increased dispersed and entrained hydrocarbon levels without providing a net environmental benefit.	No	The use of surface dispersant would therefore potentially expose subsea organisms and habitats to increased dispersed and entrained hydrocarbon levels without providing a net environmental benefit.
In-situ burning	In-situ burning is only effective where minimum slick thickness can be achieved and where calm metocean conditions can be confirmed. Use of this technique would also cause an increase the release of atmospheric pollutants.	There is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which would be difficult to achieve. Furthermore, this technique may be prevented from being undertaken due to personnel safety issues arising from predicted high local concentrations of atmospheric volatiles.	No	The safety concerns and the predicted low effectiveness associated with implementing an in-situ burning response outweigh the potential environmental benefit.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of sensitive resources and can be used to corral oil into slicks thick enough to skim effectively.	Stochastic modelling does not predict any shoreline contact at feasible response thresholds. If real-time monitor and evaluate and operational monitoring activities indicate surface hydrocarbons are moving toward shorelines, pre-emptive assessments of sensitive receptors at risk and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills).	No	Stochastic modelling does not predict any shoreline contact at feasible response thresholds.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	Stochastic modelling does not predict any shoreline contact at feasible response thresholds. If real-time monitor and evaluate and operational monitoring activities indicate hydrocarbons will contact shorelines, pre-emptive assessments of sensitive receptors at risk, shoreline assessments and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills).	No	Stochastic modelling does not predict any shoreline contact at feasible response thresholds.
Oiled wildlife response	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	In the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists. Due to the likely volatile atmospheric conditions surrounding a condensate spill, response options may be limited to hazing to ensure the safety of response personnel.	Yes	This technique may prevent impact to and/or treat oiled wildlife providing net environmental benefit.

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Table 4-2: Response technique evaluation – Surface Loss of Well Containment (MEE-01 Scenario-02)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: GWA Condensate				
Monitor and evaluate	Will be effective in tracking the location of the spill, informing when it has entered State Waters, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: • Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • Pre-emptive assessment of sensitive receptors at risk – triggered once monitor and evaluate informs likely RPAs at risk.	Monitoring of a condensate spill is a feasible response technique and an essential element of all spill response incidents. Outputs will be used to guide decision making on the use of other monitoring/response techniques and providing required information to regulatory agencies including AMSA and Western Australia Department of Transport and Major Infrastructure (WA DTMI).	Yes	Monitoring the spill will be necessary to: • validate trajectory and weathering models • determine the location and state of the slick • provide forecasts of spill trajectory • determine appropriate response techniques • determine effectiveness of response techniques • confirm impact pathways to receptors • provide regulatory agencies with required information.
Source control via well intervention using ROV and hotstab	Controlling a loss of well containment at source via BOP intervention would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	Source control via well intervention using ROV and hotstab for a loss of well containment at the GWA Platform (MEE-01 Scenario-02) is not feasible due to it being a platform wellhead positioned above sea level.	No	Source control via well intervention using ROV and hotstab is not feasible at the GWA Platform due to it being a platform wellhead positioned above sea level.
Source control via debris clearance and capping stack	Controlling a loss of well containment at source via capping stack would be an effective way to limit the quantity of hydrocarbon entering the marine environment.	Source control via capping stack for a loss of well containment at the GWA Platform (MEE-01 Scenario-02) is not feasible due to it being a platform wellhead positioned above sea level.	No	Capping stack is not feasible at the GWA Platform as the wellhead is positioned above sea level.
Source control via relief well drilling	A release of condensate will be over approximately 68 days. Relief well drilling is one of the primary options to stop the release.	For MEE-01 Scenario-02, relief well drilling will be a feasible means of stopping a loss of well containment event. Relief well drilling is a widely accepted and utilised technique.	Yes	Relief well drilling will be the main technique employed to control a loss of well containment event.
Subsea dispersant injection	Application of subsea dispersant may reduce the scale and extent of hydrocarbons reaching the surface and thus may reduce spill volumes contacting predicted RPAs. SSDI can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals and fish, which may be otherwise unaffected. Entrained oil plume likely to be increased resulting in greater spatial extent of entrained oil.	GWA08 is a platform wellhead, therefore, SSDI is not feasible for this surface release scenario.	No	GWA08 is a platform wellhead, therefore, SSDI is not feasible for this surface release scenario.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	Surface dispersant application may potentially provide a net environmental benefit where its use would reduce the volume of shoreline oiling in sensitive regions. At certain times it may not provide an environmental benefit, for example, during coral spawning seasons due to coral larvae being highly sensitivity to dispersants (Negri et al, 2018). Whilst modelling predicts that hydrocarbons will be present at the minimum required surface threshold for feasible use of surface dispersant (>50 g/m^2), this peaks at 2 km^2 on day 4 and there are no further hydrocarbons present at >50 g/m^2 by day 6. Shoreline contact is predicted at one RPA (Muiron Islands) on day 71.4 (6 m^3). The use of surface dispersant would therefore potentially expose subsea organisms and habitats to increased dispersed and entrained hydrocarbon levels without providing a net environmental benefit of significance.	No	The use of surface dispersant would potentially expose subsea organisms and habitats to increased dispersed and entrained hydrocarbon levels without providing a net environmental benefit.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. It has the potential to reduce the magnitude, probability, extent, contact and accumulation of hydrocarbon on shorelines receptors when suitable encounter rates can be achieved. It also has the potential to reduce the magnitude and extent of contact with submerged receptors by removing oil before further natural entraining/dissolving of hydrocarbons occurs.	Whilst modelling predicts that hydrocarbons will be present at the minimum required surface threshold for feasible containment and recovery operations (>50 g/m^2), this peaks at 2 km^2 on day 4 and there are no further hydrocarbons present at >50 g/m^2 by day 6. Shoreline contact at >100 g/m^2 is predicted at one RPA (Muiron Islands) on day 71.4 (6 m^3). Offshore metocean conditions may limit effectiveness of containment and recovery operations and corralling volatile hydrocarbons such as condensate may pose a risk to response personnel. If real-time monitor and evaluate techniques detect hydrocarbons at appropriate thresholds, metocean conditions are suitable, and the safety of response	Potentially	If real-time monitor and evaluate techniques detect hydrocarbons at appropriate thresholds, metocean conditions are suitable, and the safety of response personnel can be guaranteed, containment and recovery may be an appropriate response option.

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		personnel can be guaranteed, containment and recovery may be an appropriate response option.		
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of sensitive resources and can be used to corral oil into slicks thick enough to skim effectively.	Modelling predicts first shoreline accumulation will occur on day 71.4 at Muiron Islands (6 m^3) allowing adequate time to deploy this technique. If real-time monitor and evaluate and operational monitoring activities indicate surface hydrocarbons are moving toward shorelines, pre-emptive assessments of sensitive receptors at risk and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills). Protection strategies can be used for targeted protection of sensitive resources. Access to sensitive areas may cause more negative impact than benefit.	Yes	RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are deemed to be at risk, based on real-time monitor and evaluate techniques during a spill event, shoreline protection and deflection techniques will be employed to minimise hydrocarbon accumulation providing net environmental benefit.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	Modelling predicts first shoreline accumulation at feasible response thresholds (>100 g/m^2) will occur on Day 71.4 at Muiron Islands (6 m^3) allowing adequate time to deploy this technique. If real-time monitor and evaluate and operational monitoring activities indicate hydrocarbons will contact shorelines, pre-emptive assessments of sensitive receptors at risk, shoreline assessments and existing TRPs will be utilised to guide shoreline protection and deflection operations, in agreement with WA DTMI (for Level 2/3 spills). Can reduce or prevent impact on sensitive receptors in most cases. Must confirm, through shoreline assessment, that sensitive sites will benefit from clean-up activities as the response itself may cause more negative impact than benefit through disturbance of habitats and species.	Yes	RPAs predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event. If RPAs are at risk, based on real-time monitor and evaluate techniques during a spill event, shoreline clean-up techniques will be deployed to expedite clean-up of the impacted sites. Removal of hydrocarbons will help shorten the recovery window unless shoreline type is of a sensitive nature. This technique can help prevent remobilisation of hydrocarbon and impact on shorelines.
Oiled wildlife response	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	In the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists. Due to the likely volatile atmospheric conditions surrounding a condensate spill, response options may be limited to hazing to ensure the safety of response personnel.	Yes	This technique may prevent impact to and/or treat oiled wildlife providing net environmental benefit.

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Table 4-3: Response technique evaluation – vessel collision

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: MDO				
Monitor and evaluate	Will be effective in tracking the location of the spill, informing when it has entered State Waters, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. Pre-emptive assessment of sensitive receptors at risk – triggered once monitor and evaluate informs likely RPAs at risk.	Monitoring of an MDO spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and WA DTMI. Practicable techniques that could be used for this scenario include predictive modelling, surveillance and reconnaissance and monitoring of hydrocarbon presence in water. Modelling does not predict impact of any shoreline receptors at threshold, however, pre-emptive assessment of sensitive receptors at risk and monitoring of contaminated resources would be utilised if any sensitive shoreline receptors are deemed to be at risk of impact.	Yes	Monitoring the spill will be necessary to: validate trajectory and weathering models determine the location and state of the slick provide forecasts of spill trajectory determine appropriate response techniques determine effectiveness of response techniques confirm impact pathways to receptors provide regulatory agencies with required information.
Source control via vessel SOPEP	Controlling the spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel or facility can safely achieve whilst responding to the incident.	Yes	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface dispersant application	Application of surface dispersant would likely reduce the volumes of hydrocarbons contacting sensitive surface receptors. Dispersant can also enhance biodegradation and may reduce volatile organic compounds (VOCs) in some circumstances therefore reducing potential health and safety risk to responders. Dispersant can increase dispersed/entrained hydrocarbons which can potentially have higher toxicity to biota in shallow water than naturally dispersed hydrocarbons. Subsurface oil plume likely to increase in size resulting in greater spatial extent of entrained oil. Entrained oil could potentially impact on sensitive shallow-water receptors e.g. corals, which otherwise may have been unaffected.	This technique is not suitable for MDO spills as this hydrocarbon type is prone to rapid spreading and evaporation. Surface dispersants are not considered effective when applied on thin surface films such as MDO as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon resulting in the unnecessary addition of chemicals to the marine environment. The volatile nature of MDO is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon thus this response technique is deemed inappropriate.	No	Surface dispersants are not considered effective when applied on thin surface films such as MDO resulting in the unnecessary addition of chemicals to the marine environment.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	No	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ burning	In-situ burning is only effective where minimum slick thickness can be achieved.	Use of in-situ burning as a response technique for MDO is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel and its used would unnecessarily cause an increase the release of atmospheric pollutants.	No	Diesel characteristics are not appropriate for the use of in-situ burning and would unnecessarily cause an increase the release of atmospheric pollutants.
Containment and recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. It has the potential to reduce the magnitude, probability, extent, contact and accumulation of hydrocarbon on shorelines receptors when suitable encounter rates can be achieved. It also has the potential to reduce the magnitude and extent of contact with submerged receptors by removing oil before further natural entraining/dissolving of hydrocarbons occurs.	This technique is not suitable for MDO spills as it is prone to rapid spreading and evaporation and is deemed unsuitable for effective containment and recovery operations. The volatile nature of MDO is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon thus this response technique is deemed inappropriate.	No	Containment and recovery would be an inappropriate response technique for a spill of MDO. Corralling a volatile hydrocarbon such as MDO is deemed unsafe for response personnel thus this response strategy is not considered feasible. In addition to the safety issues, most of the spilled diesel would have been subject to rapid evaporation prior to the commencement of containment and recovery operations.

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Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Shoreline protection and deflection	Shoreline protection and deflection can be effective at preventing contamination of sensitive resources and can be used to corral oil into slicks thick enough to skim effectively.	An MDO spill would be prone to rapid spreading and evaporation and modelling predicts that no shoreline receptors will be contacted at response threshold (>100 g/m^2). Furthermore, the volatile nature of MDO is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Monitor and evaluate and operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time.	No	In addition to safety issues and the rapid spreading and evaporation of the diesel, the modelling undertaken predicts that no shoreline receptors would be contacted at feasible response thresholds.
Shoreline clean-up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	An MDO spill would be prone to rapid spreading and evaporation and modelling predicts that no shoreline receptors will be contacted at response threshold (>100 g/m^2). Furthermore, the volatile nature of MDO is also likely to lead to unsafe conditions in the vicinity of the hydrocarbon. Monitor and evaluate and operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time	No	In addition to safety issues, the modelling undertaken predicts that no shoreline receptors would be contacted by floating oil concentrations at a recoverable threshold and a spill of MDO is unlikely to accumulate at concentrations appropriate for shoreline clean-up techniques.
Oiled wildlife response	Oiled wildlife response is an effective response technique for reducing the overall impact of a spill on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination.	Due to the likely volatile atmospheric conditions surrounding a diesel spill, response options may be limited to hazing to ensure the safety of response personnel. The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. Monitor and evaluate and operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time. Thus, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken in accordance with the Wildlife Response Operational Plan as and where required. In addition, any rehabilitation could only be undertaken by trained specialists.	Yes	The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

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5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *ALARP Guidance Note N-04300-GN0166* (2022) and *Oil Spill Risk Management Guidance Note N-04750-GN1488 A382148* (2026) and is set out in the 'Woodside Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) Guidelines'.

From the identified response planning need and pre-operational NEBA/ spill impact mitigation assessment (SIMA), Woodside conducts a structured, semi-quantitative hydrocarbon spill process which has the following steps:

- considers the response planning need identified in terms of surface area (km^2) and available surface hydrocarbon volumes (m^3) against existing Woodside capability
- considers alternative, additional, and improved options for each response technique/control measure by providing an initial and, if required, detailed evaluation of:
  - predicted cost associated with adopting the control measure
  - predicted change/environmental benefit
  - predicted effectiveness/feasibility of the control measure.
- evaluates the risks and impacts of implementing the proposed response techniques, and any further control measures with associated environmental performance to manage these additional risks and impacts.

Woodside considers the risks and impacts from a hydrocarbon spill to have been reduced to ALARP when:

- a structured process for identifying and considering alternative, additional, and improved options has been completed for each selected response technique
  - the analysis of alternate, additional, and improved control measures meets one of the following criteria:
  - all identified, reasonably practicable control measures have been adopted; or
  - no identified reasonably practicable additional, alternative and/or improved control measures would provide further overall increased proportionate environmental benefit; or
  - no reasonably practical additional, alternative, and/or improved control measures have been identified.
- where an alternative, additional and/or improved control measure is adopted, a measurable level of environmental performance has been assigned
- higher order impacts/ risks have received more comprehensive alternative, additional, and improved control measure evaluations and do not just compare the cost of the adopted control measures to the costs of an extreme or clearly unreasonable control measure
- cumulative effects have been analysed when considered in combination across the whole activity.

The response technique selection is based on the risk assessment conducted in the EP. The risk assessment identifies the type of oil, volume of release, duration of release, predicted fate, weathering and the EMBA (along with other requirements such as time to impact and predicted volumes ashore). Modelling is then used to inform the NEBA and the prioritisation of suitable response options. The scale of the response techniques selected in the pre-operational NEBA is informed through the assessment of results from deterministic modelling.

For the purpose of the ALARP assessment, the following terms and definitions have been used:

- response techniques are considered the control measures that reduce consequences from hydrocarbon spill events. The terms 'response technique' and 'control measure' are used interchangeably
- cost is defined as the time, effort and/or trouble taken in financial, safety, design/storage/installation, capital/lease, and/or operations/maintenance terms to adopt a control measure

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- where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in Annex A.

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5.1 Monitor and evaluate

Monitor and evaluate includes the gathering and evaluation of data to inform the oil spill response planning and operations. It includes fate and trajectory modelling, spill tracking, weather updates and field observations. This response option is deployed in some capacity for every event.

Techniques may include:

- predictive modelling of hydrocarbons to assess resources at risk
- surveillance and reconnaissance to detect hydrocarbons and resources at risk
- pre-emptive assessment of sensitive receptors at risk

Woodside maintains an *Operational Monitoring Operational Plan*. If shoreline contact is predicted, Response Protection Areas (RPAs) will be identified and assessed before contact. If shorelines are contacted, a shoreline assessment survey (SCAT) will be completed to guide effective shoreline clean-up operations per arrangements detailed in Woodside's Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP) (see Section 5.9). This plan includes the process for the CIMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Dampier/ Karratha to the spill event location means that multiple logistical options are available to monitor the spill in relatively short timeframes. The primary mobilisation base for initial monitoring activities would be Dampier/ Karratha. However, in the unlikely event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Dampier/ Karratha.

5.1.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- floating surface oil in sufficient concentrations for effective monitor and evaluate and operational monitoring activities is expected to be present in open water with surface concentrations of 10 g/m^2 up to 99 km from the release location (MEE-01 Scenario-01).
- the shortest timeframe that shoreline contact from floating oil at 100 g/m^2 is predicted is 71.4 days at Muiron Islands (6 m^3) (MEE-01 Scenario-02).
- the time to contact for oil at concentrations of dissolved hydrocarbons greater than 10 ppb 7 hours at Rankin Bank (MEE-01 Scenario-01)
- arrangements for support organisations who provide specialist services or resources should be tested regularly.
- plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.
- the duration of the spill may extend up to 76 days (MEE-01 Scenario-01) with response operations extending to 3 months based on the predicted time to shoreline contact and execution of source control operations.

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5.1.2 Environmental performance based on need

Table 5-1: Environmental performance – monitor and evaluate

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
1	Oil spill trajectory modelling	1.1	Initial modelling available within 6 hours using the Rapid Assessment Tool	1, 3B, 3C, 4
		1.2	Detailed modelling available within 4 hours of RPS receiving information from Woodside	
		1.3	Detailed modelling service available for the duration of the incident upon contract activation	
2	Tracking buoy	2.1	Tracking buoy located on facility/ lead vessel and ready for deployment 24/7	1, 3A, 3C, 4
		2.2	Deploy tracking buoy from facility/ lead vessel within 2 hours as per the First Strike Plan.	1, 3A, 3B, 4
		2.3	Contract in place with service provider to allow data from tracking buoy to be received 24/7 and processed.	1, 3B, 3C, 4
		2.4	Data received to be uploaded into Woodside common operating picture (COP) daily to improve the accuracy of other Operational Monitoring techniques.	1, 3B, 4
3	Satellite imagery	3.1	Contract in place with 3rd party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.	1, 3C, 4
		3.2	3rd party provider will confirm availability of an initial acquisition within 2 hours	1, 3B, 3C, 4
		3.3	First image received with 24 hours of Woodside confirming to 3rd party provider its acceptance of the proposed acquisition plan.	1
		3.4	3rd party provider to submit report to Woodside per image. Report is to include a polygon of any possible or identified slick(s) with metadata.	1
		3.5	Data received to be uploaded into Woodside COP daily to improve accuracy of other Operational Monitoring techniques.	1, 3B, 4
		3.6	Satellite Imagery services available and employed during response	1, 3C, 4
4	Aerial surveillance	4.1	Two trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	One aircraft available for two sorties per day, available for the duration of the response from day 1	1, 3C, 4
		4.3	Observer to compile report during flight as per FSP. Observers report available to the IMT within 2 hours of landing after each sortie.	1, 2, 3B, 4
		4.4	Unmanned Aerial Vehicles/Systems (UAV/UASs) to support Shoreline Contamination Assessment Technique (SCAT), containment and recovery and surface dispersal and pre-emptive assessments as contingency if required.	1, 2
5	Pre-emptive assessment of sensitive receptors	5.1	10 days prior to any predicted impact, in agreement with WA DTMI (for Level 2/3 incidents), deployment of Two specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4

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Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
		5.2	Daily reports provided to IMT on the status of the receptors to prioritise Response Protection Areas (RPAs) and maximise effective utilisation of resources.	1, 3B, 4

The control measures and capability of Woodside and its third-party service providers are shown to support monitor and evaluate activities up to and including the identified WCCS. This is demonstrated by the following:

- Woodside has a documented, structured and tested capability for Operational Monitoring operations including internal trajectory modelling capabilities, tracking buoys located offshore and contracted aerial observation platforms with access to trained observers.
- Woodside and its third-party service providers seek to maintain sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.1.

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5.2 Source control and well intervention

The worst-case credible scenario for a loss of well containment, is considered to be major damage to, or complete loss of, the Xmas tree from a producing well. This scenario would result in an uncontrolled flow from the well as outlined in the EP. In the event of a complete break or separation of the tree, the primary response would be relief well drilling.

Woodside is a signatory to a MoU between Australian offshore operators to provide mutual aid to facilitate and expedite mobilising a MODU and drilling a relief well, if a [subsea scenario] incident were to occur. The MoU commits the signatories to share rigs, equipment, personnel and services to assist another operator in need.

5.2.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- prior to any source control activities, Woodside will implement protocols to confirm that the site is safe including subsea ROV surveys and surface air monitoring.
- hydrocarbons will flow from the well until one of the following interventions can be made:
  - direct intervention to close Xmas tree (subsea wells only)
  - closure of the Tubing Retrievable Safety Valve (TRSV)
  - capping stack is deployed (subsea wells only)
  - a relief well is drilled and first attempt at well kill within 76 days for the worst-case loss of well containment scenario (MEE-01 Scenario-01).
- arrangements for support organisations who provide specialist services or resources should be tested regularly.
- plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.
- the duration of the spill may extend up to 76 days (MEE-01 Scenario-01) with response operations extending to three months based on the predicted time to shoreline contact and execution of source control operations.

In addition, a number of assumptions are required to estimate the response need for source control. These assumptions have been described in the table below.

Table 5-2: Response planning assumptions – source control

Response planning assumptions	
Safety considerations	Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site, in accordance with the Woodside Management System (WMS). Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • high winds, waves and/or sea states • high ambient temperatures.
Feasibility considerations	Woodside's primary source control option would be ROV intervention followed by relief well drilling for the GWA Facility Operations and GWA Facility Operations wells. The following approaches outline Woodside's hierarchy for relief well drilling; • Primary – Review internal drilling programs and MODU availability to source an appropriate rig operating within Australia with an approved Safety Case; • Alternate – Source and contract a MODU through Australian Energy Producers (AEP) Memorandum of Understanding (MoU) that is operating within Australia with an approved Safety Case; • Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case

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5.2.2 Environmental performance based on need

Table 5-3: Environmental performance – source control

Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
6	Subsea First Response Toolkit (SFRT)	6.1	Oceaneering support staff available all year round, via contract, to assist with the mobilisation, deployment, and operation of the SFRT equipment.	1, 3B, 3C
		6.2	Intervention vessel with minimum requirement of a working class ROV and operator.	1, 3C
		6.3	Mobilised to site for deployment within 11 days.	1, 3B, 3C
		6.4	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B
7	Well intervention	7.1	Frame agreements with ROV providers in place to be mobilised upon notification. ROV equipment deployed within 7 days.	1, 3B, 3C
		7.2	Source control vessel will have the following minimum specifications: • active heave compensated crane, rated to at least 150 T in shallower water and 250 T in deeper water. • at least 90 m in length • deck has water/electricity supply • deck capacity to hold at least 110 T of capping stack.	1, 3B, 3C
		7.3	Identify source control vessel availability within 24 hours and begin contracting process. Vessel mobilised to site for deployment within 16 days for conventional capping.	1, 3B, 3C
		7.4	Well intervention attempt made using ROV and SFRT within 11 days.	1, 3B, 3C
		7.5	Capping stack on suitable vessel mobilised to site within 16 days. Deployment and well intervention attempt will be made once plume size is acceptable and safety and metocean conditions are suitable.	1, 3C
		7.6	Contract in place for access to equipment and staff to assist with the mobilisation, deployment, and operation of well intervention equipment.	1, 3B, 3C
		7.7	MODU mobilised to site for relief well drilling within 21 days for a locally available rig and up to 36 days for a rig from outside of the region.	1, 3C
		7.8	First well kill attempt completed within 76 days (MEE-01 Scenario-01 - for worst-case LOWC scenario).	1, 3B, 3C
		7.9	Open communication line(s) to be maintained between IMT and infield operations to confirm awareness of progress against plan(s).	1, 3A, 3B
		7.10	Monthly monitoring of the availability of MODUs through existing market intelligence including current Safety Case history, to meet specifications for relief well drilling. Titleholders of suitable MODUs notified.	3C
8	Support vessels	8.1	Access to 24/7 vessel tracking software to monitor availability of suitable vessels to meet specifications for source control.	3C

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Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
		8.2	Frame agreements for installation support vessels (ISVs) require vessels to maintain in-force safety case approvals covering ROV operations and provide support in the event of an emergency.	1, 3B, 3C
		8.3	MODU and vessel contracts include clause outlining requirement for support in the event of an emergency	1, 3C
9	Safety Case	9.1	Woodside will prioritise MODU or vessel(s) for intervention work(s) that have an existing safety case	1, 3C
		9.2	Woodside Planning, Logistics, and Safety Officers (on roster/Call 24/7) to assist in expediting the safety case assessment process as far as practicable.	1, 3C
		9.3	Woodside will maintain minimum safe operating standards that can be provided to MODU and vessel operators for Safety Case guidance.	1, 3C

The resulting source control capability has been assessed against the WCCS. The range of techniques provide a feasible and viable approach to relief well drilling operations to stop the well flowing.

- The health and safety, financial, capital and operations/maintenance costs of implementing the alternative, additional or improved control measures identified and not carried forward are considered grossly disproportionate to the insignificant environmental benefit gained and/or not reasonably practicable for this Petroleum Activity.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.2.

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5.3 Source Control via vessel Shipboard Oil Pollution Emergency Plan (SOPEP)

Vessel source control will be conducted, where feasible and in accordance with MARPOL 73/78 Annex I, by the Vessel Master under the Shipboard Oil Pollution Emergency Plan (SOPEP) triggered by any loss of containment from the Petroleum Activity vessels.

The SOPEP provides guidance to the Master and Officers on board the vessel with respect to the extra steps to be taken when an unexpected pollution incident has occurred or is likely to occur. The SOPEP contains all information and operational instructions required by International Maritime Organization (IMO) Resolution MEPC.54 (32) adopted on 6 March 1992, as amended by resolution MEPC.86 (44) adopted on 13 March 2000.

Its purpose is to set in motion the necessary actions to stop or minimise oil discharge and mitigate its effects and outlines responsibilities, pollution reporting requirements, procedures and resources needed in the event of a hydrocarbon spill from vessel activities.

In the event of the WCCS vessel collision event, the vessel master may engage precautionary marine manoeuvres to avoid collision or commence pumping operations to transfer MDO and thus minimise the release.

5.3.1 Environmental performance based on need

Woodside has established control measures, environmental performance outcomes, performance standards and measurement criteria to be used for vessel-source oil spill response during the Petroleum Activity which are detailed in Section 6.8 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.5.

Performance standards for each contracted Petroleum Activity vessel are detailed in the vessel's specific SOPEP.

These standards maintain availability of sufficient resources and are adequately tested for successful implementation of the SOPEP in the event of a hydrocarbon spill.

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5.4 Containment and Recovery

Containment and recover is used to reduce damage to sensitive resources by the physical containment and mechanical removal of hydrocarbons from the marine environment. It has a lower capacity for removing surface oil than the application of dispersant but avoids potential additional impacts created by the resulting increase in entrained hydrocarbons in the water column.

Weathering and spreading of hydrocarbons will significantly reduce containment and recovery effectiveness. In the event of an ongoing loss of well control, modelling predicts fresh hydrocarbons reaching the surface may be heavily weathered and present in small discrete patches. Containment and Recovery is also weather and sea–state dependent. Periods of downtime can be expected.

Wind direction in the vicinity of the Petroleum Activity indicate south-westerly winds in summer months and easterly winds in the winter period. Average wind speeds across the year near the release site vary in the range of 5.2-6.6 m/s (Beaufort ~3-4), with year-round maximum speeds of 24.1 m/s (Beaufort ~9-10) (RPS modelling input data, 2026). Industry guidance indicates that maximum wind speeds for safe and effective containment and recovery operations are ~10 m/s (20 knots, Beaufort ~5) (IPIECA, 2015b) therefore, at times, it is expected that open water containment and recovery operations would not be a feasible response technique.

The *Containment and Recovery Operational Plan* details the mobilisation and resource requirements for response operations including the logistics, support and facility arrangements to manage the movement of personnel and resources.

5.4.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which response need is based:

- surface hydrocarbons meeting minimum threshold concentration (>50 g/m^2) for feasible containment and recovery operations are predicted to peak on day 4 at 2 km^2 (115.3 m^3) (MEE-01 Scenario-02) based on deterministic model: Q2, Run 15.
- surface hydrocarbons meeting minimum threshold concentration (>50 g/m^2) for feasible containment and recovery operations are predicted within 10 km^2 of the release location (MEE-01 Scenario-01) based on stochastic modelling.
- containment and recovery is not appropriate for spills of MDO (CS-03 and CS-04).
- the duration of the spill may be up to 76 days (MEE-01 Scenario-01) with offshore response operations extending to 3 months based on the predicted time to shoreline contact and execution of source control operations (MEE-01 Scenario-02).
- containment and recovery is not appropriate for spills of MDO (MEE-05 Scenario-08).
- arrangements for support organisations who provide specialist services (logistics services for mobilising equipment, trained Offshore Supervisors and waste disposal) and/or resources (vessels, containment and recovery equipment, transfer pumping systems) should be tested regularly.
- plans, procedures and support documents need to be in place for Operational and Support Sections. these should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for Containment and Recovery. These assumptions have been described in the table below.

Table 5-4: Response Planning Assumptions – Containment and Recovery

Response Planning Assumptions	
Safety considerations	Containment and recovery operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • high winds, waves and/or sea states • high ambient temperatures.

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Response Planning Assumptions		
Technique	Predicted performance range (% of surface oil volume available predicted to be recovered by response technique)	
Containment and recovery	Lower	5%
	Upper	10%
	The predicted performance range for containment and recovery is based on; • remaining surface oil available for containment and recovery following weathering • monitor and evaluate activities observing surface oil at minimum BAOAC 4 (discontinuous true oil colour) or BAOAC 5 (continuous true oil colour) • safe for deployment, within range of vessels and aircraft • encounter rate of approximately 50-75% (50-25% of surface coverage is not surface oil)	
Response Capability details		
Containment and recovery operation	One containment and recovery operation includes; • 2 x suitable vessels (vessel specifications as per Marine Operations Plan) • 1 x boom system (min 800 mm overall height and approximately 200 m length) with all required ancillaries) or • 1 x suitable vessel (vessel specifications as per Marine Operations Plan) • 1 x single ship system (min 800 mm overall height and approximately 200 m length) with all required ancillaries) and • 1 x skimmer (min 20 m^3/hr) with all required ancillaries • Temporary storage (min 100 m^3) • 1-2 x trained supervisor per operation • 8-10 x support personnel per operation	
Physical properties	Surface Threshold • Lower – 50 g/m^2 (equates to 100 g/m2 with approximately 50% coverage and/or 200 g/m^2 with approximately 25% coverage) – BAOAC 4 – discontinuous true oil colour – lower threshold 50 g/m2 • Optimum – 100 g/m^2 (equates to >100 g/m^2 with approximately 100% coverage and/or 200 g/m^2 with approximately 50% coverage) – BAOAC 5 – Continuous true oil colour – lower threshold 200 g/m2	
Expected effectiveness	One containment and recovery operation is expected to be able to contain and recover approximately 22.5 – 67.5 m^3 per day (10 hr operation) includes one (1) change out of temporary waste storage equipment (if required) Based on the following assumptions: • boom system with 70 m opening = 0.07 km • vessel moving at 0.7 kn = 1.3 km/h • area covered per hour = 0.07 km x 1.3 km = 0.09 km^2 • area covered per day = 0.09 km^2 x 10 hours = 0.9 km^2 / day • recovery per day (low) = 0.9 km^2 x 50 g/m^2 x 50% coverage = 22.5 m^3/ 10-hour day • recovery per day (high) = 0.9 km^2 x 100 g/m^2 x 75% = 67.5 m^3/ 10-hour day Increased surface oil concentration may result in increased recovery capacity providing other conditions and oil properties remain suitable for containment and recovery. For planning purposes, conservative concentrations outlined above have been used.	

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5.4.2 Environmental performance based on need

Table 5-5: Environmental performance – containment and recovery

Environmental Performance Outcome		To reduce consequences to surface and shoreline receptors.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
10	Vessel-based recovery systems	10.1	Woodside maintains an integrated fleet of vessels, including vessels with at least 10 t bollard pull. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3B, 3C, 4
		10.2	2 containment and recovery operations would be deployed within 48 hours (if required).	
		10.3	2 additional containment and recovery operations using 3rd party provider resources would be deployed by day 4.	
		10.4	Each operation will have internal or added 100 m^3 of liquid waste storage onboard.	
11	Response teams	11.1	Deployment of 2 containment and recovery teams would be available within 48 hours and 4 containment and recovery teams available by day 4.	1, 2, 3A, 3B, 3C, 4
		11.2	Deployment team will be comprised of: • 1-2 trained specialists per operation • 8-10 personnel for support • Personnel sourced through resource pool	1, 2, 3B, 4
		11.3	Teams will segregate liquid and solid wastes at the earliest opportunity.	
		11.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
12	Response systems	12.1	Rapid sweep systems and active boom systems to be prioritised for mobilisation in the event of a response.	1, 3C
13	Management of Environmental Impact of the response risks	13.1	The boom will be monitored and maintained to ensure trapped fauna are released as early as possible, with Containment and Recovery activities occurring in daylight hours only.	1
		13.2	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	
		13.3	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

Woodside has assessed the resulting containment and recovery capability against the WCCS and surface release scenarios.

Due to reduction in available surface oil based on movement of the slick and ongoing weathering, the efficiency of this response technique decreases significantly over the initial week. From Day 6, surface concentrations are predicted to be below thresholds for effective offshore response for MEE-01 Scenario-02.

- Surface concentration and mass vary for each time step based on spreading and weathering algorithms within the model. Woodside has reviewed the deterministic modelling data based on the response planning assumptions outlined above to determine the response need and required capability.

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- For MEE-01 Scenario-02, deterministic modelling predicts that there will be sufficient volumes (peak volume of 115.3m^3 on Day 4 and peak surface area of 2km^2 on Day 4) of surface hydrocarbons for containment and recovery operations to recover. Woodside's existing capability is sufficient to recover the expected surface hydrocarbons throughout the incident.
- From Day 6, there are no longer sufficient surface hydrocarbons to recover. Woodside's existing capability is insufficient to recover the expected surface hydrocarbons.
- Containment and recovery operations would target the thickest parts (BAOAC 4-5) at the leading edge of the surface slick and as close to the spill source as is feasible. This approach aims to mitigate the spread of the oil and maximise encounter rate in order to reduce potential shoreline accumulations.
- The efficiency of this response technique will decrease significantly as the slick moves, breaks into wind-rows and weathers resulting in less surface concentrations available for effective offshore recovery.
- At times, the capability will be limited by safety or logistics including number of available vessels and/or maintenance of feasible safe simultaneous operations (SIMOPS).
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.4.

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5.5 Shoreline Protection and Deflection

The placement of containment, protection or deflection booms on and near a shoreline is a response technique to reduce the potential volume of hydrocarbons contacting or spreading along shorelines, which may reduce the scale of shoreline clean-up. Hydrocarbons contained by the booms would be collected where practicable.

Shorelines would be protected where accessible via vessel or shore. Where hydrocarbon contact has already occurred, there may still be value in deploying protection equipment to limit further accumulations and preventing remobilisation of stranded hydrocarbons.

Shoreline protection and deflection equipment would be mobilised to selected locations, where the following conditions were met:

- Sea-states and hydrocarbon characteristics are safe to deploy protection and deflection measures,
- Oil trajectory has been identified as heading towards identified RPAs.

5.5.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- The shortest timeframe that shoreline contact from floating oil above threshold is predicted to be 71.4 days at Muiron Islands (6 m^3) (MEE-01 Scenario-02).
- Pre-emptive assessment and shoreline assessments will be mobilised prior to shoreline contact at 100 g/m^2, which occurs on day 71.4 at Muiron Islands (MEE-01 Scenario-02).
- The duration of the spill may be up to 76 days (MEE-01 Scenario-01) with shoreline response operations extending to 3 months based on the predicted time to shoreline contact and execution of source control operations (MEE-01 Scenario-02).
- Arrangements for support organisations who provide specialist services (trained personnel, protection and deflection equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents need to be in place for Operational and Support Sections. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for Shoreline Protection and Deflection. These assumptions have been described in the table below.

Table 5-6: Response Planning Assumptions – Shoreline Protection and Deflection

Response Planning Assumptions	
Safety considerations	Shoreline protection and deflection operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • safe for deployment and conditions within range of vessels • high ambient temperatures.
Shoreline Protection and Deflection	One Shoreline Protection and Deflection operation may include; • Quantity of shoreline sealing boom (as outlined in TRP) • Quantity of fence or curtain boom (as outlined in TRP) • 1-2 trained supervisors • 8-10 personnel/ labour hire Specific details of each operation would be tailored to the Tactical Response Plan implemented (where available).

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5.5.2 Environmental performance based on need

Table 5-7: Environmental Performance – Shoreline protection and deflection

Environmental Performance Outcome		To stop hydrocarbons encountering particularly sensitive areas		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
14	Response teams	14.1	In liaison with WA DTMI (for Level 2/3 incidents), relevant Tactical Response Plans (TRPs) will be identified in the First Strike plan for activation 10 days prior to a predicted impact.	1, 3A, 3C, 4
		14.2	In liaison with WA DTMI (for Level 2/3 incidents), mobilise teams to RPAs 5 days prior to a predicted impact. Teams to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • Personnel sourced through resource pool.	1, 2, 3B, 3C, 4
		14.3	In liaison with WA DTMI (for Level 2/3 incidents), 1 operation mobilised to each identified RPA. Expected to be 1 RPAs by day 71.4 (operation as detailed above).	1, 3A, 3B, 4
		14.4	12 trained personnel available 5days prior to a predicted impact for each identified RPA. Sourced through resource pool.	1, 2, 3A, 3B, 3C, 4
		14.5	Open communication line to be maintained between IMT and infield operations to confirm awareness of progress against plan(s)	1, 3A, 3B
		14.6	The safety of shoreline response operations will be considered and appropriately managed. During shoreline operations: • All personnel in a response will receive an operational/safety briefing before commencing operations • Gas monitoring and site entry protocols will be used to assess safety of an operational area before allowing access to response personnel	1, 3B, 4
15	Response equipment	15.1	Equipment mobilised from closest stockpile 5 days prior to a predicted impact.	1, 3A, 3C, 4
		15.2	Supplementary equipment mobilised from AMOSC and State stockpiles 5 days prior to a predicted impact.	1, 3C, 4
		15.3	Supplementary equipment mobilised from OSRL 10 days prior to a predicted impact.	
		15.4	Woodside maintains integrated fleet of vessels. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3C, 4
16	Management of Environmental Impact of the response risks	16.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		16.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

The resulting shoreline protection and deflection capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline protection and deflection at identified RPAs.

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Under optimal conditions, during the subsea and surface releases the capability available exceeds the need identified. It indicates that, the shoreline protection and deflection capability have the following expected performance:

- Modelling predicted shoreline impact at feasible response thresholds at Muiron Islands only, within 71.4 days (6 m^3) (MEE-01 Scenario-02).
- Existing capability allows for mobilisation and deployment of shoreline protection operations by Day 1-2 (if required). Given shoreline contact at RPAs is not predicted until Day 71.4 at Muiron Islands, the existing capability is considered sufficient to mobilise and deploy protection at RPAs prior to hydrocarbon contact, guided by the ongoing monitor and evaluate activities.
- The most significant constraint on expanding the scale of response operations is the availability of accommodation and transport services in the region between Exmouth and Port Hedland, and the management of response generated waste. From previous assessment of accommodation in this region, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.5.

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5.6 Shoreline Clean-up

Shoreline clean-up may be undertaken using a broad range of techniques when floating hydrocarbons contact shorelines. The timing, location and extent of shoreline clean-up activities can vary from one scenario to another, depending on the hydrocarbon type, sensitivities and values contacted, shoreline type and access, degree of oiling, and area oiled.

Shoreline clean-up is typically undertaken as a three-phase process:

- phase one (gross contamination removal) involving the collection of bulk oil, either floating against the shoreline or stranded on it
- phase two (moderate to heavy contamination removal) involving removal or in-situ treatment of shoreline substrates such as sand or pebble beaches, and
- phase three (final treatment or polishing) involving removal of the remaining residues of oil.

As phase one typically involves recovery of floating and pooled oil, and phase three removes minor volumes, they have not been considered in the assessment of response need for the scenarios identified.

The *Shoreline Clean-up Operational Plan* details the mobilisation and resource requirements for a shoreline clean-up operation including the logistics, support and facility arrangements to manage the movement of personnel and resources.

The *Shoreline Clean-up Operational Plan* includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Woodside would activate and mobilise trained and competent personnel in shoreline assessment before or following shoreline contact at response thresholds.

Shoreline clean-up consists of different manual and mechanical recovery techniques to remove hydrocarbons and contaminated debris from a shoreline; this is to minimise ongoing environmental contamination and impact. The National Plan also provides guidance on shoreline clean-up techniques as outlined in National Plan Guidance *Response assessment and termination of cleaning for oil contaminated foreshores* (AMSA 2015).

5.6.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- The shortest timeframe that shoreline contact from floating oil is predicted is 71.4 days (8 m^3) at Muiron Islands (MEE-01 Scenario-02).
- The duration of the spill may extend up to 76 days (MEE-01 Scenario-01) with shoreline response operations extending to 3 months (MEE-01 Scenario-02) based on the predicted time to shoreline contact and execution of source control operations.
- Pre-emptive assessment and shoreline assessments will be mobilised prior to shoreline contact.
- Following Shoreline Assessment and agreement of prioritisation with WA Department of Transport and Major Infrastructure and Major Infrastructure, clean-up operations would commence until agreed termination criteria are reached.
- Arrangements for support organisations who provide specialist services (trained personnel, labour hire, shoreline clean-up, and site management equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents should be in developed and in place for Operational and Support Sections. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for shoreline clean-up. These assumptions have been described in the table below.

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Table 5-8: Response Planning Assumptions – Shoreline Clean-up

Response planning assumptions: Shoreline clean-up	
Safety considerations	Shoreline clean-up operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • waves and/or sea states, tidal cycle and intertidal zone limits • presence of wildlife • high ambient temperatures.
Manual shoreline clean-up operation (Phase 2)	One, manual shoreline clean-up operation (Phase 2) may include: • 1–2 x trained supervisor • 8–10 x personnel/ labour hire • Supporting equipment for manual clean-up including rakes, shovels, plastic bags etc.
Physical properties	Surface Threshold • Lower – 100 g/m^2–100% coverage of 'stain' – cannot be scratched off easily on coarse sediments or bedrock – Expected trigger to undertake detailed shoreline survey • Optimum – 250 g/m^2 – 25% coverage of 'coat' – can be scratched off with a fingernail on coarse sediments – Expected trigger to commence clean-up operations
Efficiency (m^3 oil recovered per person per day)	Manual shoreline clean-up (Phase 2) – approximately 0.25–1 m^3 oil recovered per person per 10 hour day is based on moderate to high coverage of oil (100 g/m^2–1,000 g/m^2) with manual removal using shovels/rakes, etc. from studies of previous response operations and exercises

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Table 5-9: Shoreline Clean-up techniques and recommendations

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Natural recovery	Allowing shoreline to self-clean; no intervention undertaken.	Remote and inaccessible shorelines for personnel, vehicles and machinery. Other clean-up techniques may cause more damage than allowing the shoreline to naturally recover. Natural recovery may be recommended for areas with mangroves and coral reefs due to their sensitivity to disturbance from other shoreline clean-up techniques. High-energy shorelines: where natural removal rates are high, and hydrocarbons will be removed over a short timeframe.	Low-energy shorelines: these areas tend to be where hydrocarbon accumulates and penetrates soil and substrates.	May be employed, if the operational NEBA identifies that other clean-up techniques will have a negligible or negative environmental impact on the shoreline. May also be used for buried or reworked hydrocarbons where other techniques may not recover these.
Manual recovery	Use of manpower to collect hydrocarbons from the shoreline. Use of this form of clean-up is based on type of shoreline.	Remote and inaccessible shorelines for vehicles and machinery. Areas where shorelines may not be accessible by vehicles or machinery and personnel can recover hydrocarbons manually. Where hydrocarbons have formed semi-solid to solid masses that can be picked up manually. Areas where nesting and breeding fauna cannot or should not be disturbed.	Coral reef or other sensitive intertidal habitats, as the presence of a response may cause more environmental damage then allowing them to recover naturally. For some high-energy shorelines such as cliffs and sea walls, manual recovery may not be recommended as it may pose a safety threat to responders.	May be used for sandy shorelines. Buried hydrocarbons may be recovered using shovels into small carry waste bags, but where possible the shoreline should be left to naturally recover to prevent any further burying of hydrocarbons (from general clean-up activities).
Sorbents	Sorbent boom or pads used to recover fluid or sticky hydrocarbons. Can also be used after manual clean-up to remove any residues from crevices or from vegetation.	When hydrocarbons are free-floating close to shore or stranded onshore. As a secondary treatment method after hydrocarbon removal and in sensitive areas where access is restricted.	Access for deploying and retrieving sorbents should not be through soft or sensitive habitats or affect wildlife.	Used for rocky shorelines. Sorbent boom will allow for deployment from small shallow draught vessels, which will allow deployment close to shore where water is sheltered and to aid recovery. Sorbents will create more solid waste compared with manual clean-up, so will be limited to cleaning rocky shorelines.

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Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Vacuum recovery, flushing, washing	The use of high volumes of low-pressure water, pumping and/or vacuuming to remove floating hydrocarbons accumulated at shorelines.	Suited to rocky or pebble shores where flushing can remobilise hydrocarbons (to be broken up) and aid natural recovery. Any accessible shoreline type from land or water. May be mounted on barges for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites. Flushing and vacuum may be useful for rocky substrate. Medium- to high-energy shorelines where natural removal rates are moderate to high. Where flushed hydrocarbons can be recovered to prevent further oiling of shorelines.	Areas of pooled light, fresh hydrocarbons may not be recoverable via vacuum due to fire and explosion risks. Shorelines with limited access. Flushing and washing not recommended for loose sediments. High-energy shorelines where access is restricted.	High volume low pressure (HVLP) flushing and washing into a sorbent boom could be used for rocky substrate, if protection booming has been unsuccessful in deflecting hydrocarbons from these areas.
Sediment reworking	Movement of sediment to surf to allow hydrocarbons to be removed from the sediment and move sand via heavy machinery.	When hydrocarbons have penetrated below the surface. Recommended for pebble/cobble shoreline types. Medium- to high-energy shorelines where natural removal rates are moderate to high.	Low-energy shorelines as the movement of substrate will not accelerate the natural cleaning process. Areas used by fauna which could potentially be affected by remobilised hydrocarbons.	Use of wave action to clean sediment: appropriate for sandy beaches where light machinery is accessible.
Vegetation cutting	Cutting vegetation to prevent oiling and reduce volume of waste and debris.	Vegetation cutting may be recommended to reduce the potential for wildlife being oiled. Where oiling is restricted to fringing vegetation.	Access in bird-nesting areas should be restricted during nesting seasons. Areas of slow-growing vegetation.	May be used on shorelines where vegetation can be safely cleared to reduce oiling.
Cleaning agents (OSCA)	Application of chemicals such as dispersants to remove hydrocarbons.	May be used for manmade structures and where public safety may be a concern.	Natural substrates and in low-energy environments where sufficient mixing energy is not present.	Not recommended for shorelines. Could be used for manmade structures such as boat ramps.

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5.6.2 Environmental performance based on need

Table 5-10: Environmental performance – shoreline clean-up

Environmental Performance Outcome		To remove bulk and stranded hydrocarbons from shorelines and facilitate shoreline amenity habitat recovery.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
17	Shoreline responders	17.1	In liaison with WA DTMI (for Level 2/3 incidents), deployment of 1 shoreline clean-up teams to contaminated RPAs comprised of: • 1-2 trained specialists per operation • 8-10 personnel/labour hire • personnel sourced through resource pool within 24 hours of request from the IMT.	1, 2, 3A, 3B, 3C, 4
		17.2	Relevant Tactical Response Plans (TRPs) will be identified in the first strike plan for activation 5 days prior to a predicted impact.	1, 3A, 3C, 4
		17.3	Clean-up operations for shorelines in line with results and recommendations from SCAT outputs	1, 3A, 3B
		17.4	All shoreline clean-up sites will be zoned and marked before clean-up operations commence.	
		17.5	In liaison with WA DTMI (for Level 2/3 incidents), mobilise and deploy up to 1 shoreline clean-up operations 5 days prior to a predicted impact.	1, 2, 3A, 3C, 4
		17.6	The safety of shoreline response operations will be considered and appropriately managed. During shoreline clean-up operations: • all personnel in a response will receive an operational/safety briefing before commencing operations • gas monitoring and site entry protocols will be used to assess safety of an operational area before allowing access to response personnel	1, 3B, 4
		17.7	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
18	Shoreline clean up equipment	18.1	Contract in place with 3rd party providers to access equipment.	1, 3A, 3C, 4
		18.2	Equipment mobilised from closest stockpile (detail in activity specific ALARP) 5 days prior to a predicted impact.	
		18.3	Supplementary equipment mobilised from AMOSC and State stockpiles 5 days prior to a predicted impact.	1, 3C, 4
		18.4	Supplementary equipment mobilised from OSRL 10 days prior to a predicted impact.	
19	Management of Environmental Impact of the response risks	19.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		19.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

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Environmental Performance Outcome		To remove bulk and stranded hydrocarbons from shorelines and facilitate shoreline amenity habitat recovery.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
		19.3	Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves	
		19.4	Removal of vegetation will be limited to moderately or heavily oiled vegetation	
		19.5	Oversight by trained personnel who are aware of the risks.	
		19.6	Trained unit leaders brief personnel prior to operations of the environmental risks of presence of personnel on the shoreline.	

The resulting shoreline clean-up capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline clean-up at identified RPAs. Woodside's capability can cover all required shoreline clean-up operations for the Petroleum Activity.

The shoreline clean-up capability has the following expected performance (if required during a response):

- Modelling predicts first shoreline impact at Muiron Islands (8 m^3) on day 71.4 (MEE-01 Scenario-02).
- Existing capability allows for mobilisation and deployment of 1 shoreline clean-up operation within 24 hours (if required). Within 48 hours, Woodside can mobilise up to 15 response operations comprising its team of trained response personnel from Karratha (the 'Burrup Response Team'), Woodside's personnel/ labour hire contract, and appropriate shoreline response equipment. This capability increases to 20 operations by day 4 and would also include team leads from Woodside, AMOSC, AMOSC Core Group and/or OSRL together with existing personnel/ labour hire contracts. Teams would comprise 1 supervisor with 8 personnel/ labour hire up to 2 supervisors with 10 personnel/ labour hire. Each individual within a team is predicted to be able to remove 0.25 m^3 to 1 m^3 oil/ oiled waste per day dependent upon the nature of the shoreline oiling.
- Assessment of response capability indicates that for a worst-case scenario the actual teams required would meet the available capability and the response would be completed by end of month 3.
- Woodside has considered deployment of additional personnel to undertake shoreline clean-up operations but is satisfied that the identified level of resource is balanced between cost, time and effectiveness.
- The most significant constraint on expanding the scale of response operations is the availability of accommodation and transport services in the region between Exmouth and Dampier and management of response generated waste. From previous assessment of accommodation in Exmouth and Dampier, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section 6.6

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5.7 Oiled wildlife response (including hazing)

Oiled wildlife response (OWR) includes wildlife surveillance/reconnaissance, wildlife hazing, pre-emptive capture, and the capture, cleaning, treatment, and rehabilitation of animals that have been oiled. In addition, it includes the collection, post-mortem examination, and disposal of deceased animals that have succumbed to the effects of oiling.

For a petroleum activity spill in Commonwealth waters, Woodside will act as the Control Agency and will be responsible for the wildlife response. In such circumstances, Woodside would implement a response in accordance with the *Oiled Wildlife Operational Plan*, the WA Oiled Wildlife Response Plan (WAOWRP) (DBCA, 2022a) and the WA OWR Manual (DBCA, 2022b). The *Oiled Wildlife Operational Plan* includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Oiled wildlife operations would be implemented with advice and assistance from the Oiled Wildlife Advisor from the Department of Biodiversity, Conservation and Attractions (DBCA).

The key plan for OWR in WA is the WAOWRP (DBCA, 2022a). The WAOWRP establishes the framework for preparing and responding to potential or actual wildlife impacts during a spill and sets out the management arrangements for implementing an OWR in conjunction with the DTMI *State Hazard Plan – Maritime Environmental Emergencies* (SHP-MEE). It is the responsibility of DBCA to administer the WAOWRP under the direction of the DTMI. The WA OWR Manual (DBCA, 2022b) supports, and should be used in conjunction with, the WAOWRP. The purpose of the WA OWR Manual is to standardise the operating procedures, protocols and processes for an OWR during a spill event in WA waters, and to create alignment between the wildlife response processes and the overall incident response (DBCA, 2022b).

If a spill occurs in WA State waters or enters State waters, DBCA is the Jurisdictional Authority for wildlife, for level 2/3 spills, and will also lead the oiled wildlife response under the control of the DTMI. DBCA is the State Government agency responsible for administering the *Biodiversity Conservation Act 2016 (BC Act)* which has provisions for authorising activities that affect wildlife.

For level 1 spills in State waters, Woodside will be the Control Agency, including for wildlife response. It is, however, also an expectation that for level 2/3 petroleum activity spills, Woodside will conduct the initial first-strike response actions for wildlife response and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders for deployment in Exmouth and Dampier. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

5.7.1 Response need based on predicted consequence parameters

Wildlife response priority areas and assessment of wildlife impact

French-McCay et al. (2002), based on a review of existing literature at the time, determined lethal thresholds for floating and shoreline oil for the external coating of wildlife to be 10 g/m^2 for floating, and 100 g/m^2 for shoreline accumulation. It should however be noted that toxicity thresholds for wildlife are likely to be highly variable due to differences in species sensitivity, type of hydrocarbon, type of exposure (ingestion or external oiling), life-stage, and on-water versus land habitat.

For planning purposes, determination of wildlife priority protection areas is based on stochastic modelling of the worst-case spill scenarios at 10 g/m^2 for floating, and 100 g/m^2 for shoreline accumulation (acknowledging that impacts to wildlife may occur at lower concentrations), the known presence of wildlife, and in consideration of the following:

- Presence of high densities of wildlife, threatened species, and/or endemic species with high site fidelity
- Greatest probability of shoreline accumulation
- Shortest timeframe to contact

Table 5-11 outlines the wildlife response areas for this activity. At the time of a spill, identification and allocation of wildlife RPA's should also take into consideration any key biological activities. Additional detail regarding species and their key biological activities within the vicinity of the Petroleum Activity are described in Section 4 of the EP.

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For WA, the Pilbara and Kimberley Regional Oiled Wildlife Plans (DBCA [formerly Department of Parks and Wildlife), 2014) provide useful information relating to wildlife priority response areas in their respective regions.

Table 5-11: Key at-risk species potentially in Response Protection Areas and open ocean

Species	Montebello MP	Rankin Bank	No Name Shoal	Wilcox Shoal	Muiron Islands & MMA
Marine turtles	✓				✓
Whale sharks	✓				✓
Seabirds and/or migratory shorebirds	✓				✓
Cetaceans – migratory whales	✓				✓
Cetaceans – dolphins and porpoises	✓	✓	✓	✓	✓
Dugongs					✓
Sharks and rays	✓	✓	✓	✓	✓

The following statements identify the key parameters upon which a wildlife response need can be based:

- Floating oil at >10 g/m^2 is predicted at Rankin Bank within 7 hours (MEE-01 Scenario-01).
- The shortest timeframe for shoreline accumulation at response thresholds (>100 g/m^2) is predicted to be 71.4 days at Muiron Islands & MMA (6 m^3).
- At sea there are likely to be low numbers of at risk or impacted wildlife, and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and operational and scientific monitoring are more likely to be the focus of response efforts.
- As the surface oil approaches shorelines and as oil accumulates on the shoreline, potential for oiled wildlife impacts is likely to increase as well as opportunities to rescue wildlife.
- It is estimated that the wildlife impact would be between medium and high, as defined in the WAOWRP (DBCA, 2022a) (Table 5-12).

Table 5-12: WAOWRP Guide for rating wildlife impact of an oil spill (DBCA, 2022)

Wildlife Impact Rating	Low	Medium	High
What is the likely duration of the wildlife response?	<3 days	3-10 days	>10 days
What is the likely total intake of animals?	<10	11-25	>25
What is the likely daily intake of animals?	0-2	2-5	>5
Are threatened species, or species protected by treaty, likely to be impacted, either directly or by pollution of habitat or breeding areas?	No	Yes – possible	Yes – likely
Is there likely to be a requirement for building primary care facility for treatment, cleaning and rehabilitation?	No	Yes – possible	Yes – likely

Tactics

Where there is imminent or actual impact to wildlife, Woodside will activate the Wildlife Division and follow the oiled wildlife incident management framework and implementation plan outlined in the Woodside *Oiled Wildlife Operational Plan*.

In Commonwealth waters, Woodside will be responsible for the planning and implementation of the OWR in its entirety. Noting that at sea, and in comparison to the shoreline, there are likely to be less wildlife impacted by an oil spill and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and integration with operational and scientific monitoring are more likely to be the focus of the OWR.

In State waters, Woodside will conduct the initial first-strike response actions for wildlife and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover

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occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

If a protracted response is likely, requiring preventative actions and/or wildlife rescue, and formal hand over to the Control Agency (in State waters) has not yet occurred, the Wildlife Division will be responsible for the development of the Wildlife Division portion of the IAP. Preventative actions, such as hazing, along with capture, intake and treatment require a higher degree of planning, approval (licenses) and skills and will be planned for and carried out under the IAP as outlined in the *Oiled Wildlife Operational Plan* and in accordance with the WAOWRP (DBCA, 2022a) and WA OWR Manual (DBAC, 20022b).

The oiled wildlife response technique targets key wildlife populations at risk within Commonwealth open waters and the nearshore waters as described in Section 4 of the EP.

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5.7.2 Environmental performance based on need

Table 5-13: Environmental Performance – Oiled Wildlife Response (OWR)

Environmental Performance Outcome		OWR is conducted in accordance with the Western Australian Oiled Wildlife Response Plan (WAOWRP, 2022) to meet legislative requirements to house, release or euthanise wildlife under the *Biodiversity Conservation Act 2016*.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
20	Wildlife response arrangements	20.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations	1, 3A, 4
		20.2	Initiate a wildlife first strike response within 24 hours of confirmed or imminent wildlife contact as directed by OMP: Marine Fauna Assessment and in liaison with DBCA.	1
21	Wildlife response equipment	21.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 4
		21.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 4
22	Wildlife responders	22.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an OWR Management course.	1, 2, 3B
		22.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists	1, 3B, 3C
		22.3	Maintain contract with OSRL to access additional trained OWR specialists	1, 3B, 3C
		22.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
23	Management of environmental impacts of response risks	23.1	Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA, and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan.	1

The resulting wildlife response capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to response at identified RPAs.

Under optimal conditions, during the subsea or surface release, the capability available meets the need identified. It indicates that, the wildlife response capability has the following expected performance:

- undertake OWR first strike response:
  - mobilisation of monitor and evaluate and/or OMP: Marine Fauna Assessment to identify wildlife and RPAs contacted or at imminent risk of contact by hydrocarbons.
- availability and mobilisation of trained OWR personnel to supervise OWR activities.
- access to wildlife resources (personnel and equipment) to meet the needs where there are medium or high levels of wildlife impact.

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5.8 Waste Management

Waste management is considered a support technique to wildlife response, containment and recovery and shoreline clean-up. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during containment and recovery, shoreline clean-up and wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris (e.g. seaweed, sand, woods, and plastics) collected during containment and recovery, shoreline clean-up and wildlife response.

Expected waste volumes during an event are likely to vary depending on oil type, volume released, response techniques employed and how weathering of hydrocarbons. Waste management, handling and capacity should be scalable to maintain continuous response operations.

All waste management activities will follow the Environment Protection (Controlled Waste) Regulations 2004 and the waste will be managed to minimise final disposal volumes. Waste treatment techniques will consider contaminated solids treatment to allow disposal to landfill and solids with high concentrations of hydrocarbon will be treated and recycled where possible or used in clean fill if suitable.

The waste products would be transported from response locations to the nearest suitable staging area/waste transfer station for treatment, disposal or recycling. Waste will be transferred with appropriately licensed vehicles. Containers will be available for temporary waste storage and will be:

- labelled with the waste type
- provided with appropriate lids to prevent waste being blown overboard
- bunded if storing liquid wastes.
- processes will be in place for transfers of bulk liquid wastes and include:
  - inspection of transfer hose undertaken prior to transfer
  - watchman equipped with radio visually monitors loading hose during transfer
  - tank gauges monitored throughout operation to prevent overflow

The *Oil Spill Preparedness Waste Management Support Plan* details the procedures, capability and capacity in place between Woodside and its primary waste services contractor to manage waste volumes generated from response activities.

5.8.1 Response need based on predicted consequence parameters

Table 5-14: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Containment and Recovery – approximately 10x multiplier for oily waste generated by containment and recovery operations
	Shoreline clean-up (manual) – approximately 5-10x multiplier for oily solid and liquid wastes generated by manual clean-up.
	Oiled wildlife response – approximately 1 m^3 of oily solid and liquid waste generated for each wildlife unit cleaned

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5.8.2 Environmental performance based on need

Table 5-15: Environmental Performance – Waste Management

Environmental Performance Outcome		To minimise further impacts, waste will be managed, tracked and disposed of in accordance with laws and regulations.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
24	Waste Management	24.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		24.2	Access to at least 213 m^3 of solid and liquid waste storage available within 2 days upon activation of 3rd party contract.	
		24.3	Access to up to 675 m^3 by end of Day4.	
		24.4	Decanting in accordance with National Plan guidelines to occur in daylight hours into the apex of the boom once hydrocarbon/water has settled in storage container.	
		24.5	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		24.6	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		24.7	Open communication line to be maintained between IMT and waste management services to ensure the reliable flow of accurate information between parties.	1, 3A, 3B
		24.8	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B, 3C, 4
		24.9	Waste management services available and employed during response	
25	Management of environmental impacts of response risks	25.1	Teams will segregate liquid and solid wastes at the earliest opportunity.	1, 3A, 3B, 3C, 4

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management at identified RPAs.

Given the largest shoreline volumes ashore are predicted in 71.4 days at a maximum volume of 6 m^3, and the capability available exceeds the need identified.

It indicates that the waste management capability has the following expected performance:

- Offshore operations may generate up to an additional 392 m^3 for one week of offshore operations (MEE-01 Scenario-02).
- Shoreline and nearshore operations may generate up to 72 m^3 over 3 months of operations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in Section .
- Woodside's waste contractor has access to approximately 120,000 m^3 to treat overall waste volumes. The waste management requirements are within Woodside's and its service providers existing capacity.

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5.9 Operational and Scientific monitoring

Operational and scientific monitoring (OSM) is a key component of the environmental management document framework for offshore petroleum activities, which includes activity EPs and OPEPs. The key elements and differences between operational monitoring and scientific monitoring include:

- Operational Monitoring (OM) – undertaken during the course of the spill and includes any physical. chemical and biological assessments that may guide operational decisions such as selecting the appropriate response and mitigation methods and/or to determine a response activity. This monitoring is additional to the activities (aerial/vessel surveillance, tracking buoys, oil spill trajectory modelling and satellite tracking) performed as part of the Monitor and Evaluate Strategy (Section 5.1). Information needs to be collected and processed rapidly to suit response needs, with a lower level of sampling and accuracy needed than for scientific purposes. For the OMP initiation and termination criteria during a Level 2-3 spill event refer to Table 9-1 of the Joint Industry OSM Framework.
- Scientific Monitoring (SM) – the principal tool for determining the extent, severity and persistence of possible environmental impacts from a hydrocarbon spill and for informing resultant remediation activities. Consequently, such studies are required to account for natural or sampling variation, and study designs must be robust and produce defensible data. Scientific monitoring is typically conducted over a wider study area, extending beyond the spill footprint, and a longer time period, extending beyond the spill response. For the Scientific Monitoring Plan (SMP) initiation and termination criteria during a Level 2-3 spill event refer to Table 9-2 of the Joint Industry OSM Framework (APPEA [now Australian Energy Producers (AEP)] 2021).

Woodside has developed a Woodside OSM Bridging Implementation Plan (OSM-BIP) [2], which describes a program of monitoring oil pollution that will be adopted in the event of a hydrocarbon spill incident (Level 2–3) to marine waters. It aligns with the Joint Industry OSM Framework (APPEA [now AEP] 2021) and describes how this Framework applies to Woodside activities and spill risks.

A series of Operational Monitoring Plans (OMPs) and Scientific Monitoring Plans (SMPs) form part of the Joint Industry OSM Framework and provide detail on monitoring design, standard operating procedures, data management, quality assurance and quality control and reporting.

Table 5-16 lists the Joint Industry OMPs and SMPs that are relevant to the Petroleum Activity. The aims/objectives of each OMP and SMP are listed in Tables 5-1 and 6-1 of the Joint Industry OSM Framework (APPEA [now AEP] 2021) respectively. Woodside confirms it has reviewed these aims/objectives and determined they are all appropriate to address the potential impacts, risks and response activities of this activity, noting that dispersant application is not a suitable response strategy for this activity.

The OSM-BIP is structured so that it can provide a flexible framework that can be adapted to individual spill incidents. The Combined OSM Planning Area (refer to section 2.1 of the OSM-BIP), derived from all Woodside worst-case scenarios, represents the geographical extent of the Woodside OSM-BIP.

The OSM requirements for this activity's credible spill scenarios, including monitoring priorities, implementation timeframes and capability is provided in ANNEX C: Petroleum Activity OSM Activity Specific Requirement and Verification of OSM-BIP Adequacy.

Woodside will review the initiation criteria for OMPs and SMPs (provided in Table 9-1 [OMPs] and Table 9-2 [SMPs] of the Joint Industry Operational and Scientific Monitoring Framework (AEP, 2021)) during the preparation of the initial IAPs, and subsequent IAPs. If any initiation criteria are met, then that relevant OMP and/or SMP will be activated via the OSM Services Provider.

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Table 5-16: Joint industry OSM plans relevant to the Petroleum Activity

Operational Monitoring	Relevant for the activity	Scientific Monitoring	Relevant for the activity
OM1: Hydrocarbon Characterisation	✓	SM1: Water Quality Impact Assessment	✓
OM2: Hydrocarbon in Water Assessment	✓	SM2: Sediment Quality Impact Assessment	✓
OM3: Hydrocarbon in Sediment Assessment	✓	SM3: Intertidal & Coastal Habitat Assessment	✓
OM4a: Dispersant Effectiveness Monitoring (Subsea)	×	SM4: Seabirds and Shorebirds Assessment	✓
OM4b: Dispersant Effectiveness Monitoring (Surface)	×	SM5: Marine mega-fauna Assessment	✓
OM5: Rapid Marine Fauna Surveillance	✓	SM6: Benthic habitat Assessment	✓
OM6: Shoreline Clean-up Assessment (SCAT)	✓	SM7: Marine fish and elasmobranch assemblages assessment	✓
		SM8: Fisheries Impact Assessment	✓
		SM9: Heritage Features Assessment	✓
		SM10: Social Impact Assessment	✓

5.9.1 Response need for Shoreline Clean-Up Assessment (SCAT) based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based:

- SCAT will be mobilised to RPAs contacted at 100 g/m^2.
- The shortest timeframe for shoreline accumulation at 100 g/m^2 predicted by modelling is 71.4 days at Muiron Islands (MEE-01 Scenario-02).

In addition, a number of assumptions are required to estimate the response need for SCAT. These assumptions have been described in Table 5-17. Consequently, for planning purposes and based on the modelling results for shortest time to contact at 100 g/m^2 there is one RPA (Muiron Islands) requiring 2 SCAT specialists. These resourcing requirements can be met via the resourcing arrangements outlined in Table 8-3 of the OSM-BIP.

Table 5-17: Response Planning Assumptions – SCAT

Response planning assumptions: SCAT	
Safety considerations	Shoreline clean-up operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • waves and/or sea states, tidal cycle and intertidal zone limits • presence of wildlife • high ambient temperatures.
SCAT	Deployment of 2 x specialists in SCAT from resource pool for each of the RPAs with predicted impacts

5.9.2 Summary – operational and scientific monitoring

A detailed OSM preparedness assessment is provided in ANNEX C: Petroleum Activity OSM Activity Specific Requirement and Verification of OSM-BIP Adequacy.

The ALARP assessment for operational and scientific monitoring (Section 6.9) considers alternate, additional, and/or improved control measures on each selected response technique.

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Known, reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be moderate and the overall delivery effectiveness determined to be medium. The OSM program's main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

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5.9.3 Environmental performance based on need

Table 5-18: Operational and scientific monitoring

Environmental Performance Outcome		Implement OSM programs to assess and report on the impact, extent, severity, persistence and recovery of sensitive receptors contacted by a spill or affected by spill response.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
26	OSM arrangements	26.1	Maintain access to OSM expertise qualified to fulfil OSM Implementation Lead role during a Level 2/3 spill event per Joint Industry OSM Framework requirements.	3A, 3B, 3C, 4
		26.2	OSM Implementation Lead responsible for overseeing implementation of OMP and SMP components in accordance with the Woodside OSM Bridging Implementation Plan[2].	
27	Access to adequate OSM capability to provide both initial and ongoing monitoring	27.1	Maintain contract with third-party OSM Services Provider to provide access to suitably qualified and competent personnel and equipment to assist in the implementation of monitoring in accordance with the capability and resourcing requirement described in Sections 8–10 of the OSM-BIP and the activity-specific capability assessment in Table C - 8 and Table C - 9 in ANNEX C.	3A, 3B, 3C, 4
		27.2	Obtain monthly capability reports from OSM Service Provider to demonstrate the capability described in Section 10 of the OSM-BIP is available throughout the activity	
		27.3	Annual testing of OSM Service Provider standby arrangements and activation process	
28	Baseline studies assurance	28.1	Annual review of environmental baseline data for all locations where spill modelling has predicted contact at relevant hydrocarbon thresholds within 7 days	3C
29	OSM-BIP maintenance	29.1	Annual review will be conducted according to the criteria in Section 11 of the OSM-BIP	3A, 3B, 3C, 4
30	OSM response	30.1	OMPs and SMPs will be activated in accordance with the initiation criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA [now AEP] 2021)	1
		30.2	Initiation criteria of OMPs and SMPs will be reviewed during the preparation of the initial Incident Action Plan (IAPs) and subsequent IAPs; and if any criteria are met, relevant OMPs and SMPs will be activated	
		30.3	If the OSM Implementation Lead identifies that additional monitoring capability is required beyond that described in Section 10 of the OSM-BIP, the need for these resources will be identified as soon as practicable and mobilised through the OSM Services Provider Contract, which includes provisions for scaling up personnel to meet monitoring program requirements	
		30.4	Decisions regarding co-mobilisation of monitoring teams will be determined following a spill event, as part of the Incident Action Planning process. These decisions will be made by the CIMT in consultation with the OSM Services Provider and relevant stakeholders, with due consideration given to safety, access to sensitive receptors, timing, and data quality requirements	
		30.5	OSM to be conducted in accordance with the Woodside OSM-BIP and, where relevant to the activity, the assessment detailed in ANNEX C: Petroleum Activity OSM Activity Specific Requirement and Verification of OSM-BIP Adequacy.	

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Environmental Performance Outcome		Implement OSM programs to assess and report on the impact, extent, severity, persistence and recovery of sensitive receptors contacted by a spill or affected by spill response.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
		30.6	Monitoring prioritisation will be undertaken in accordance with the process and checklist provided in Table 13-1, informed by the guidance in Section C.2 of the OSPRMA	
		30.7	Mobilisation and implementation of OMPs and SMPs will be undertaken in accordance with the indicative timeframes and sequencing described in Section C.3 of the OSPRMA and Part B of the OSM-BIP	
		30.8	Implementation of OSM will comply with the minimum standards listed in Appendix A of the Joint Industry OSM Framework	
		30.9	Once Scientific Monitoring data reports are drafted, they will be peer reviewed by an expert panel for data integrity	
		30.10	OMPs and SMPs will be terminated in accordance with the termination criteria provided in Table 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA [now AEP] 2021)	
31	Shoreline Clean-up Assessment Technique (SCAT)	31.1	Mobilisation within 24 hours, in agreement with WA DTMI (for Level 2/3 incidents), deployment of 2 x specialist(s) in SCAT from resource pool for each of the Response Protection Areas (RPAs) with predicted impacts	1, 2, 3B, 3C, 4
		31.2	Reports from OM6: Shoreline Clean-up Assessment will be provided to the IMT daily, detailing the assessed areas to maximise effective utilisation of resources.	1, 3B, 4
		31.3	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		31.4	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		31.5	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations	
		31.6	Vehicular access will be restricted on dunes, turtle nesting beaches an in mangroves	

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5.10 Incident Management System (IMS)

The Incident Management System (IMS) is both a control measure and a measurement criteria. As a control measure the IMS function is to prompt, facilitate and record the completion of the key response planning processes detailed below (see Sections 5.10.1, 5.10.2 and 5.10.3. As a measurement criteria, the IMS records the evidence of the timeliness of all response actions included in the environmental performance standards and the plans used of the Petroleum Activity.

As the IMS does not directly remove hydrocarbons spilt into the marine environment there is no direct relationship to the response planning need.

5.10.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist the IMT with the execution of that plan. The site-based Incident Commander (IC) may request the CIMT to complete notifications internally within Woodside, to relevant persons/ organisations and government agencies as required. Depending on the type and scale of the incident either the CIMT DM or IC will be responsible for ensuring the development of the IAP. Incident Action Planning is an ongoing process that involves continual review to confirm the appropriateness of techniques to control the incident for the situation at the time.

5.10.2 Operational NEBA process

In the event of a response Woodside will confirm that the response techniques adopted at the time of EP and OPEP acceptance remain appropriate to reduce the consequences of the spill. This process verifies that there is a continuing net environmental benefit associated with continuing the response technique through the operational NEBA process. This process manages the environmental risks and impacts of response techniques during the spill response, An operational NEBA will be undertaken throughout the response, for each operational period.

The operational NEBA will consider the risks and benefits of conducting and response activity. For example, if vessels are required for access to nearshore or onshore areas, anchoring locations will be selected to minimise disturbance to benthic habitats. Vessel cleanliness would be commensurate with the receiving environment. The operational NEBA will consider the risks and benefits of conducting other response techniques.

The operational NEBA process is also used to terminate a response. Using data from operational and scientific monitoring activities the response to a hydrocarbon spill will be terminated in accordance with the termination process outlined in the Joint Industry OSM Framework (APPEA, 2021). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.10.3 Consultation engagement process

Woodside will consult relevant persons/ organisations are engaged during the spill response in accordance with internal standards. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for relevant persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

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5.10.4 Environmental performance based on need

Table 5-19: Environmental Performance – Incident Management System

Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
32	Operational SIMA	32.1	Confirm that the response techniques adopted at the time of acceptance remain appropriate to reduce the consequences of the spill within 24 hours.	1, 3A
		32.2	Record the evidence and justification for any deviation from the planned response activities.	
		32.3	Record the information and data from operational and scientific monitoring activities used to inform the SIMA.	
33	Stakeholder engagement	33.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made	
		33.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		33.3	Undertake communications in accordance with: • Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure	
34	Personnel required to support any response	34.1	Action planning is an ongoing process that involves continual review to confirm the appropriateness of techniques to control the incident are appropriate to the situation at the time.	1, 3B
		34.2	A duty roster of trained and competent people will be maintained to maintain minimum manning requirements are met all year round.	3C
		34.3	Immediately activate the CIMT with personnel filling one or more of the following roles: • CIMT Incident Commander • CIMT Deputy Incident Commander • Operations Section Chief • Planning Section Chief • Logistics Section Chief • Documentation Unit Leader • Safety Officer • Environment Unit Leader • Human Resources Officer • Public Information Officer • Situation Unit Leader • Finance Section Chief • Source Control Section Chief	1, 2, 3B, 3C, 4
		34.4	Collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist with the execution of that plan.	
		34.5	Security and Emergency Management (S&EM) advisors will be integrated into CIMT to monitor performance of all functional roles.	
		34.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	

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Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.11)**
		34.7	Follow the Hydrocarbon Spill Australia Regulatory Framework, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4
		34.8	Contribute to Woodside's response in accordance with the aims and objectives set by the Incident Commander.	1, 2, 3B, 3C, 4

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5.11 Measurement criteria for all response techniques

Woodside measures compliance with environmental performance outcomes and standards through four primary mechanisms. The aforementioned performance tables identify which of these four mechanisms monitors the readiness and records the effectiveness and performance of the control measures adopted.

1. The Incident Management System

The Incident Management System (IMS) supports the implementation of the Crisis and Emergency and Crisis Management Procedure Standard. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Crisis and Emergency Management (CEM) Standard defines the management framework, including roles and responsibilities, to be applied to any size incident (including hydrocarbon spills). The organisational structure required to manage an incident is developed in a modular fashion and is based on the specific requirements of each incident. The structure can be scaled up or down. The IAP process formally documents and communicates the:

- Incident objectives
- Status of assets
- Operational period objectives
- Response techniques (defined during response planning)
- The effectiveness of response techniques.

The information captured in the IMS (including information from personal logs and assigned tasks/close outs) confirms the response techniques implemented remain appropriate to reduce the consequences of the spill. The system also records all information and data that can be used to support the site-based IMT, development and the execution of the IAP.

2. The CEM Competency Dashboard

The CEM competency dashboard records the number of trained and competent responders that are available across Woodside to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-1 shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

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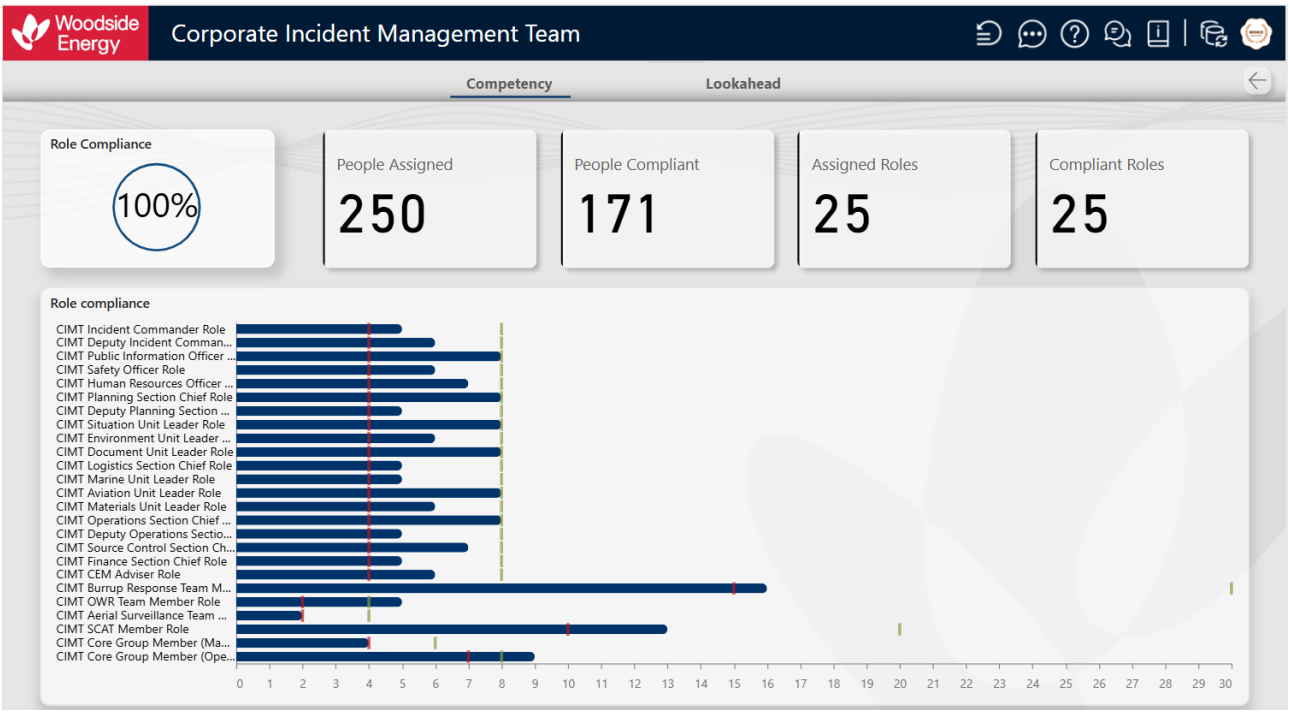


Figure 5-1: Example screenshot of the CEM dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also demonstrates Woodside's ability to meet the requirements of the environmental performance standards that relate to filling certain response roles.

Figure 5-2 shows an example of the SCAT role and the training modules required to show competence.

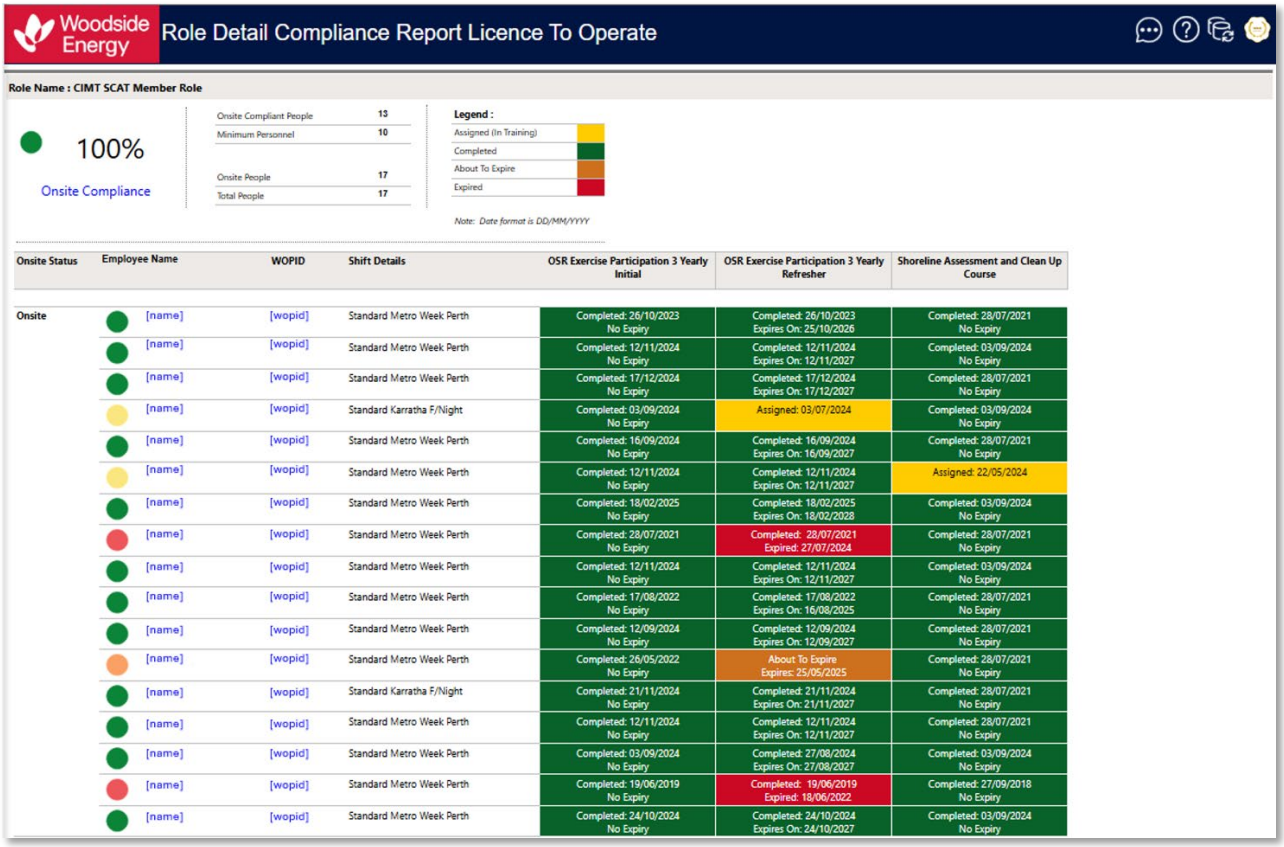


Figure 5-2: Example screenshot for the SCAT role

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Woodside also maintains a pool of trained responders which is composed of but not limited to personnel from the following organisations:

- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- Woodside contracted workforce

3. The Hydrocarbon Spill Preparedness Assurance Process

The Hydrocarbon Spill Response Team uses Woodside's assurance process to track compliance over three key control areas:

a. **Plans** – confirms all plans (including: Hydrocarbon Spill Australia Regulatory Framework, first strike plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.

b. **Competency (personnel and testing)** – confirms the competency dashboard is up to date and there are the minimum numbers across CIMT, Crisis Management Team (CMT) and hydrocarbon spill response roles. The hydrocarbon spill training plan and exercise schedule, including testing of arrangements is also tracked. The Testing of Arrangements (ToA) register tracks the testing of all hydrocarbon spill response arrangements, key contracts and agreements in place with internal and external parties to ensure compliance.

c. **Capability (equipment and contracts)** – tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet[7] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

The assurance process records how each commitment listed in the performance tables above is managed for ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the CEM Function.

4. The Hydrocarbon Spill Planning Standard, Hydrocarbon Spill Planning Work Instruction (Australia), Hydrocarbon Spill Capability and Competency Standard, and Hydrocarbon Spill Response Standard

The Hydrocarbon Spill Planning Standard sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this standard does not apply to scenarios relating to gas releases in the marine environment). This standard details the requirement for an OPEP to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable).

The Hydrocarbon Spill Planning Work Instruction (Australia) details planning for hydrocarbon spill response preparedness including:

- Developing OPEPs.
- Defining how spill scenarios are developed on an activity specific basis
- Priority response receptor determination.
- ALARP determination.

The Hydrocarbon Spill Capability and Competency Standard details:

- Developing spill training requirements and ongoing maintenance of training and competency for personnel
- Developing requirements for spill exercising / testing of spill response arrangements
- Maintaining access to identified equipment, personnel and contracts.
- Ensuring compliance and assurance is undertaken in accordance with external and internal requirements.

7 The Integrated fleet consists of vessels from multiple operators that have been contracted to Woodside to undertake a number of duties including hydrocarbon spill response.

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The Hydrocarbon Spill Response Standard details requirements for appropriate hydrocarbon spill response standards including:

- safeguarding the safety and health of people (responders and communities)
- stopping the source of the spill as quickly as possible
- minimising the environmental and community impact

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6 ALARP EVALUATION

This section should be read in conjunction with Section 5 which is the capability planned for this activity.

6.1 Monitor and evaluate – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.1 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.1.1 Monitor and evaluate – Control Measure Options Analysis

6.1.1.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly. Requires multiple systems for shoreline use.	Purchase cost per system is approximately A$300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No

6.1.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to Monitor and evaluate data used to inform all other response techniques. No improvement required.	Woodside considers no improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approximately A$25,000.	This option is not adopted as the current capability meets the need.	No
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility and additional needs are met from Woodside-owned stocks in King Bay Support Facility (KBSF) and Exmouth or can be provided by service provider.	Cost for an additional satellite tracking buoy would be A$200 per day or A$6000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	No
Additional trained aerial observers.	Current capability meets need. Woodside has access to a pool of trained, competent observers at strategic locations to allow timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Aviation standards and guidelines confirm all aircraft crews are competent for their roles. Woodside maintains a pool of trained and competent aerial observers with various home base locations to be called upon at the time of an incident. Regular audits of oil spill response organisations maintain training and competency.	Cost for additional trained aerial observers would be A$2000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via response contractors if required.	No

6.1.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A$50,000 for 24hr access plus an initial A$5000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No
Nighttime aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The	Flights will only occur when deemed safe by the pilot. The risk of night operations is disproportionate to the	No improvement can be made without risk to personnel health and safety and breaching Woodside's Golden Safety Rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	No

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Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
	images would be of low quality and as such the variable is not adopted.	benefit gained, as images from sensors (IR, UV, etc). will be low quality. Flight time limitations will be adhered to.			

6.1.2 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional: none selected
- Improved: none selected

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6.2 Source Control – ALARP Assessment

Woodside has based its response planning on the worst-case credible scenarios (as described in Section 2.2). This includes the following selection of primary source control and well intervention techniques which would be conducted concurrently:

- direct ROV intervention on Xmas tree (subsea wells only)
- debris clearance and/or removal
- capping stack (subsea wells only)
- relief well drilling.

6.2.1 ROV Intervention

Following confirmation of an emergency event, Woodside would mobilise inspection class ROVs to assess the status of the wellhead. The ROV available on the MODU can be deployed for this purpose within 48 hours. Work class ROVs for well intervention are also available through the existing frame agreements and are available for deployment within seven days (Table 6-1).

As Woodside holds Frame Agreements for vessels along with contracts for ROV providers and pilots, inspection activities using ROVs are expected to commence within seven days.

A hydraulic accumulator contained as part of the SFRT can be mobilised and deployed with well intervention attempted within 11 days.

Table 6-1: ROV timings

	Estimate ROV inspection duration for GWA Facility Operations
Source and mobilise vessel with work class ROV	2 days
Liaise with Regulator regarding risks and impacts*	4 days
Undertake ROV Inspection	1 day
TOTAL	**7 days***

** Based on timings from the Report into the Montara Commission of Enquiry, submission and discussion of revised documentation for limited activities inside the Petroleum Safety Zone (water deluge operations) to manage personnel risks and impacts was up to 20 days.*

6.2.1.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661), confirming that vessels conducting subsea intervention operations are not classified as an “associated offshore place” but as a facility and therefore require the appropriate Safety Case arrangements to be in place. In the event of an emergency, Woodside has access to suitable vessels (ISVs) for well intervention through existing frame agreements. The frame agreements for ISV vessels require the vessels to maintain in-force safety case approval covering a range of subsea activities. This would cover the requirement for intervention operations such as subsea manifold installation, maintenance and repair, commissioning, cargo transfer (including bulk liquids) and ROV operations. With frame agreements in place, the credible Safety Case Scenario from those presented in Figure 6-3 for implementing this response would be “no safety case revision required”. Timeframes for well intervention are detailed in Figure 6-2 and would be implemented concurrently to the actions required by the “no Safety Case” revision scenario detailed in Figure 6-3, therefore, the Safety Case scenario will have no impact on the delivery of the strategy.

6.2.2 Debris clearance and/or removal

The Woodside Source Control Response Procedure details the mobilisation and resource requirements for implementing this strategy. Debris clearance may be required as a prerequisite to deployment of the capping stack. The AMOSC SFRT would be mobilised from Fremantle. The mobilisation of the SFRT would take place in parallel with mobilisation of the capping stack to ensure initial ROV surveys and debris clearance have commenced before the arrival of the capping stack. The SFRT comprises ROV-deployed cutters and tools that are used to remove damaged or redundant items from the wellhead and allow improved access to the well. The SFRT can be mobilised and deployed with well intervention attempted within 11 days.

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6.2.2.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and can confirm that vessels conducting debris clearance and removal operations are not classified as an "associated offshore place" but as a facility and therefore require the appropriate Safety Case arrangements in place. In the event of an emergency, Woodside has access to suitable ISVs for these operations through existing frame agreements. The frame agreements for ISVs require the vessels to maintain in-force safety case approval covering a range of subsea activities. This would cover the requirement for debris clearance and removal operations such as subsea manifold installation, commissioning, cargo transfer (including bulk liquids) and ROV operations. With frame agreements in place, the credible Safety Case Scenario, from those presented in Figure 6-3 for implementing this response would be "no safety case revision required". Timeframes for debris clearance and removal equipment deployment are detailed in Figure 6-2 and would be implemented concurrently to the actions required by the "No Safety Case" revision scenario detailed in Figure 6-3, therefore, the Safety Case scenario will have no impact on the delivery of the strategy.

6.2.3 Capping stack

The Petroleum Activity will be covered by a Source Control Emergency Response Plan (SCERP) detailing the mobilisation and resource requirements for implementing this strategy. A capping stack is designed to be installed on a subsea well and provides a temporary means of sealing the well, until a permanent well kill can be performed through either a relief well or well re-entry.

In the event of a loss of well containment, the use of a subsea deployment method such as a heavy lift vessel, which is more commonly used in industry, is a more reliable and, in turn, ALARP approach. If environmental conditions permit (wind speed, wave height, current and plume radius), deployment of a capping stack with a heavy lift vessel with a 150 T crane capacity in shallower waters or 250 T crane in deeper waters could be feasible.

Woodside assumes that sourcing conventional capping stack deployment vessels would be per the SCERP. This plan has pre-identified vessel specifications for the capping stack deployment and Woodside monitors the availability and location of these vessels on a monthly basis. Woodside maintain several frame agreements with various vessel service providers and maintains the ability to call off services with a capping stack and debris clearance agreement. The supply arrangements and reliability to achieve the required mobilisation time will be revalidated prior to spud. Consideration to mobilise the capping stack from the supplier on a suitable vessel but then hand over to another vessel to conduct the capping activity will also be made to meet response time frames.

A capping stack will be mobilised to site within 16 days. Woodside will monitor the conditions around the wellsite and deployment for well intervention attempt will be undertaken once plume size is acceptable and safety and metocean conditions are suitable.

6.2.3.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and can confirm that vessels conducting capping stack are not classified as an "associated offshore place" but as a facility and therefore require the appropriate Safety Case arrangements in place.

The 16-day timeframe to mobilise the vessel is based on the following assumptions:

- existing frame agreement vessel, located outside the region with approved Australian Safety Case
- a safety case revision and scope of validation is required
- vessel meets the technical requirements for deploying capping stack as per the Source Control Emergency Response Plan
- vessel has an active heave compensated crane, rated to at least 150 T for shallow waters or 250 T in deeper waters and at least 90 m in length and a deck capacity to hold at least 110 T of capping stack.

Timeframes for capping stack deployment detailed in Figure 6-2 would be implemented concurrently with the actions required for the Safety Case revision development scenarios detailed in Figure 6-3 and Table 6-3.

Woodside will execute the capping stack response in the fastest possible timeframe, provided the required safety and metocean conditions allow. Woodside has considered a broad range of alternate, additional, and improved options as outlined later in Section 6.2.5.

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6.2.4 Relief well drilling

The options analysis detailed in this section considers options to source, contract and mobilise a MODU and ensure necessary regulatory approvals are in place to meet timelines for relief well drilling. The screening for relief well drilling MODUs is based on the following and the process used for GWA Facility Operations is illustrated in Figure 6-1:

- Primary – review internal Woodside drilling programs and MODU availability to source an appropriate MODU operating within Australia with an approved Safety Case.
- Alternate – source and contract a MODU through AEP MOU that is operating within Australia with an approved Safety Case.
- Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case.

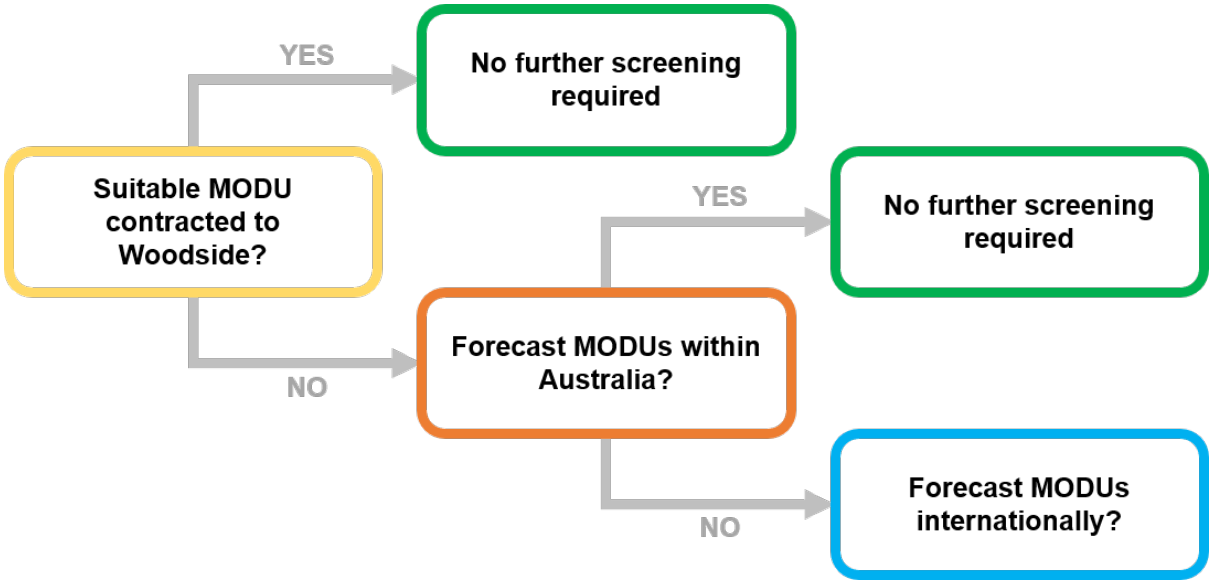


Figure 6-1: GWA Facility Operations process for sourcing relief well MODU

In the event the Woodside contracted MODUs are unsuitable, screening is extended to all MODUs operating in Australian Waters including those outside of the North West Shelf region. Screening of a relief well MODU from international waters is undertaken where there is low confidence in local (Australian) availability. For these circumstances, Woodside will screen for suitable MODUs in closest proximity to the North West Shelf region e.g. South East Asia, and relevant additional controls will be implemented as detailed in Section 6.2.6 and/or Section 6.2.7.

If a suitable international MODU is not identified, an internal review will be undertaken, NOPSEMA notified, and the issue tabled at the Australian Energy Producers' Drilling Industry Safety Committee (AEP DISC). A review of the significance of the change in risk will be undertaken in accordance with Woodside's environment management of change requirements and relevant regulatory triggers. Based on the detail provided, mobilisation of a suitable and available MODU in North West Shelf region is expected to be achieved within 21 days and from South East Asia within 36 days. If a MODU was available in South East Australia, mobilisation is estimated to be 47 days. Woodside will seek to execute relief well drilling in the fastest possible timeframe.

The detail of these arrangements demonstrates that the risks have been reduced to ALARP and Acceptable levels through the control measures and performance standards outlined in Section 5.2.

6.2.4.1 Relief Well drilling timings

The duration of a blowout (from initiation to a successful kill) for the worst-case loss of well containment scenario is assessed as 76 days (MEE-01 Scenario-01) for the Petroleum Activity. Relief wells for other wells within the field are expected to be similar duration.

Details on the steps and time required to drill a relief well is shown in Table 6-2. Moored MODUs are suitable for the Petroleum Activity. A moored MODU has been used as the basis for the time estimate below.

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To validate the effectiveness of the relief MODU supply arrangements through the AEP MoU, an exercise to test the mobilisation period forms part of Woodside's three-yearly Hydrocarbon Spill Arrangements Testing Schedule. Testing of these arrangements are facilitated by an external party and includes suspension of the assisting operator's activities, contracting the MODU, vessel safety case revision and transit to location.

Table 6-2: Relief well drilling timings for the worst-case loss of well containment scenario (MEE-01 Scenario-01)

Estimated Relief Well Duration	Moored Days (local MODU)		Moored Days (regional MODU)	
Rig mobilisation				
Secure and suspend well. Complete Relief well design. Secure relief well materials.	8.0	21.0 days	8.0	36.0 days
Transit to location based on mobilisation from within the region	2.0		17.0	
Backload and loadout bulks and equipment, complete internal assurance of relief well design.	2.0		2.0	
Contingency for unforeseen event	9.0		9.0	
Mooring activities and relief well construction operations	26		26	
Intersection & well kill comprising the following stages:				
Drill out shoe, conduct formation integrity test and drill towards intersection point	8.0	14.0 days	8.0	14.0 days
Execute well-specific ranging plan to accurately intersect wellbore in minimum timeframe	2.0		30	
Pump kill weight drilling fluid per the relief well plan. Confirm well is static with no further flow	2.0		2.0	
Contingency for unforeseen technical issues	9.0		9.0	
Total discharge duration	**61 days (local MODU)**		**76.0 days (regional MODU)**	

Woodside has considered a broad range of alternate, additional, and improved options as outlined in Section 6.2.5.

Intersect and kill duration is estimated at 14 days. This is a moderately conservative estimate. During the intersect process, the relief well will be incrementally drilled and logged to accurately approach and locate the existing well bore. This will result in the highest probability of intersecting the well on the first attempt and thus will reduce the overall time to kill the well

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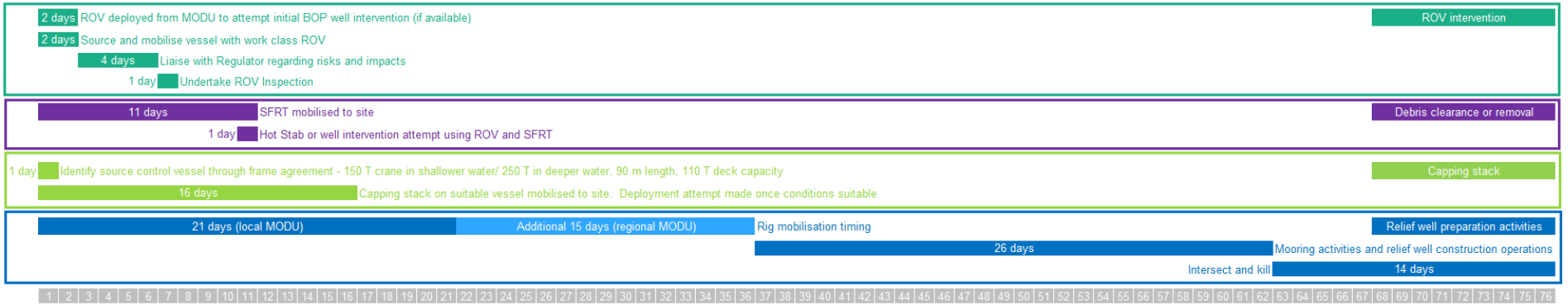


Figure 6-2: Source control and well intervention response strategy deployment timeframes for the worst-case loss of well containment scenario (MEE-01 Scenario-01) for the Petroleum Activity

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6.2.4.2 Safety Case considerations

Woodside recognises that it will not be the Operator or holder of the Safety Case for the MODU and/or vessels involved in relief well activities. In the event that a revision to the Operator's Safety Case is required for relief well drilling, Woodside has identified measures to ensure timely response and optimise preparedness as far as practicable that can be undertaken to expedite a straightforward Safety Case revision for a MODU/ vessel to commence drilling a relief well. Performance standards associated with these measures have been included in Section 5.2. Section 6.2.6 details ALARP controls to improve activation and mobilisation arrangements including maintenance of an 'Emergency Response Tactical Response Plan' to assist in accelerating Safety Case revision(s).

These include;

- Access to Safety and Risk discipline personnel with specialist knowledge.
- Monitoring internal and external MODUs and vessel availability in the region and extended area through contracted arrangements on a monthly basis, with a two-year lookahead.
- Prioritisation of MODUs/vessels with current or historical contracting arrangements. Woodside maintains records of previous contracting arrangements and companies. All current contracts for vessels and MODUs are required to support Woodside in the event of an emergency.
- Leverage mutual aid arrangements such as the AEP MOU for vessel and MODU support.
- Woodside Planning and Logistics, and Safety Officers (on-Roster/Call 24/7) which can articulate need for, and deliver Woodside support, in key delivery tasks including sitting with potential outside operators.
- Ongoing strategic industry engagement and collaboration with NOPSEMA to work toward time reductions in regulatory approvals for emergency events.

Woodside has identified three safety case revision development and submission scenarios for a MODU and plotted these alongside the relief well preparation activities in Figure 6-3. The assumptions for each of the cases are detailed in subsequent Table 6-3.

A relief well Safety Case Revision would leverage the previously accepted Safety Case Revision for the Petroleum Activity, including the associated site-specific well hazards. As such, there is less new detail for the regulator to review and should present a short review timeframe with no impact expected to the commencement of relief well drilling activities.

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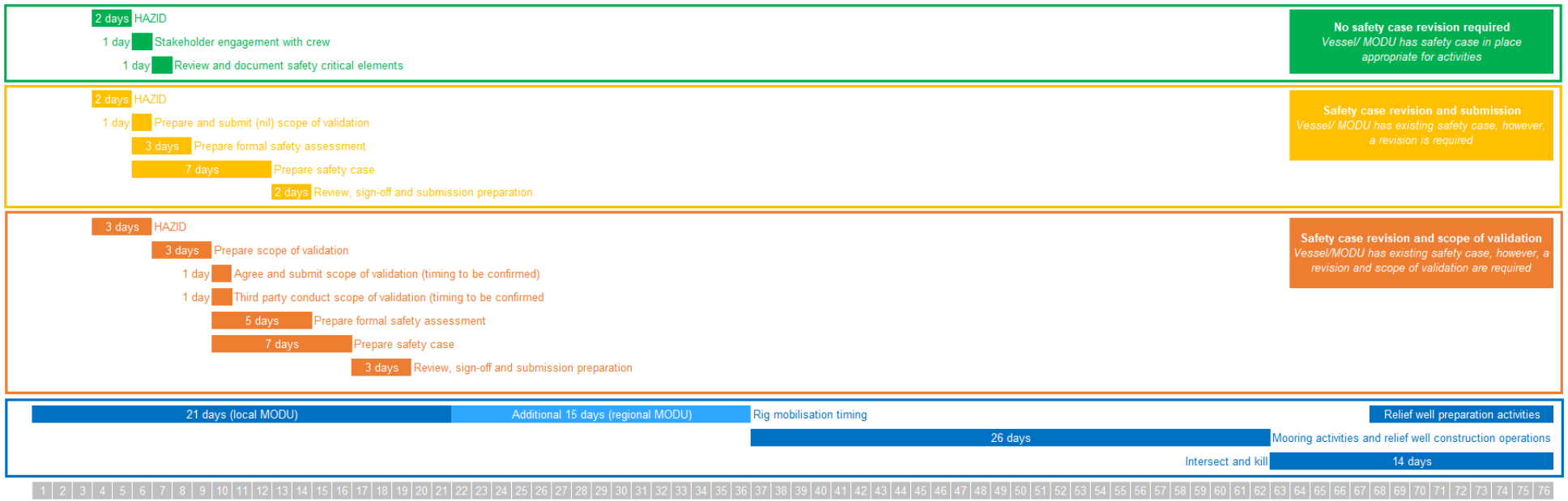


Figure 6-3: Timeline showing safety case revision timings alongside other relief well preparation activity timings for the worst-case loss of well containment scenario (MEE-01 Scenario-01) for the Petroleum Activity

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Table 6-3: Safety case revision conditions and assumptions

Case	No safety case revision required	Safety case revision and submission	Safety case revision and scope of validation
Description	Vessel/MODU has a safety case in place appropriate for activities.	Vessel/MODU has an existing safety case, however, a revision is required.	Vessel/MODU has an existing safety case, however, a revision is required plus scope of validation.
Conditions/ assumptions	Assumes that existing vessel/MODU safety case covers working under the same conditions or the loss of containment is not severe enough to result in any risk on the sea surface.	Safety case timing assumes vessel/MODU selected and crew and available for workshops and safety case studies.	Safety case timing assumes vessel/ MODU selected and crew and available for workshops and safety case studies.
		Assumes nil scope of validation. This assumes that the vessel for source control allows for working in a hydrocarbon environment and control measures are already in place in the existing safety case. For MODU, it assumes that the relief well equipment is already part of the MODU facility and MODU safety case.	Validation will be required for new facilities only. The time needed for the validator to complete the review (from the last document received) and prepare validation statement is undetermined. This is not accounted for here as the safety case submission is not dependent on the validation statement, however the safety case acceptance is.
		Assumes safety case preparation is undertaken 24/7.	Assumes safety case preparation is undertaken 24/7.

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6.2.5 Source Control – Control Measure Options Analysis

The assessment described in Section 6.2.1, 6.2.2, 6.2.3 and 6.2.4 outline the primary and alternate approach respectively that Woodside would implement for relief well drilling.

Woodside has outlined the options considered against the activation, mobilisation (improved options), deployment (alternate and additional options) process described in Section 2.1.1 that provides an evaluation of:

- predicted cost associated with adopting the option
- predicted change/environmental benefit
- predicted effectiveness/feasibility of the option

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical.

- Alternative options, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control.
- Additional control measures are evaluated in terms of their ability to reduce an impact or risk when added to the existing suite of control measures.
- Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Options where there is not a clear justification for their inclusion or exclusion may be subject to a detailed assessment.

6.2.6 Activation/Mobilisation – Control Measure Options Analysis

This section details the assessment of alternative, additional or improved control measures that were considered to ensure the selected level of performance in Section 5.2 reduces the risk to ALARP. The Alternative, Additional and Improved control measures that have been assessed and selected are highlighted in green and the relevant performance of the selected control is cross referenced. Items highlighted in red have been considered and rejected on the basis that they are not feasible or the costs are clearly grossly disproportionate compared to the environmental benefit.

6.2.6.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Contract and run a rig on standby or warm stack on the north-west shelf, shared for all Woodside activities.	A standby MODU shared across all Woodside activities is likely to provide a moderate environmental benefit as it will maintain or may reduce the 21-day sourcing, contracting and mobilisation time. This could reduce the volume and duration of the release through shorter time to kill the well and thus may reduce impacts on receptors and sensitivities.	This option is not considered feasible for all Woodside activities as there are a large range of well depths, complexities, geologies and geophysical properties across all Woodside's operations. The large geographic area of Woodside activities also means that the MODU is unlikely to be in the correct location at the right time when required.	Estimate for 12 months of operations: US$ 500k/day (0.66FX) plus A$ 30M startup would total A$307M. This is considered disproportionate to the environmental benefit potentially achieved by reducing mobilisation time. Further, there are additional health, safety and environmental impacts associated with running a rig on standby.	The costs and complexity of having a MODU and maintaining this arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained.	No
Standby MODU shared across AEP MOU Titleholders	A standby MODU shared across all titleholders who are signatories to the AEP MOU is likely to provide a minor environmental benefit as it will maintain or may reduce the 21-day sourcing, contracting and mobilisation time. This could reduce the volume and duration of the release through shorter time to kill the well and thus may reduce impacts on receptors and sensitivities. Running a MODU on standby together with the required support vessels/ aircraft, however, will result in increased atmospheric emissions from burning fuel. The MODU may also increase seabed damage. Deployment of such resources will also increase SIMOPs complexity and elevate health and safety risks to personnel.	This option is not considered feasible for a number of Titleholders due to the remote distances and regions in which Titleholders operate within Australia, as well as a substantial range of well depths, types, complexities, geologies and geophysical properties across the range of Titleholders.	Costs are dependent upon the number of AEP MOU Titleholders involved. Additional costs and complexity involved given commercial arrangements that would need to be addressed.	The costs and complexity of having a MODU and maintaining a shared arrangement for the duration of the Petroleum Activities Program, together with increased environmental, SIMOPs and health and safety risks, are disproportionate to the environmental benefit gained.	No
Mobilise Equinox MODU from Victoria with associated additional time impact and water depth limitations	Longer mobilisation duration than 36 days (estimated 47 days), leading to increased relief well drilling timeframe.	This option is considered feasible however it would result in longer MODU mobilisation time.	Potential for higher cost of mobilisation compared with relief well rigs from South East Asia.	Considered not to be the primary option given increased mobilisation timeframes compared with mobilising a rig from South East Asia. Possible that this option could be activated in parallel with the South East Asia mobilisation, or in the event South East Asia rig mobilisation is unsuccessful.	Evaluate

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Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Mobilise relief well MODU from further afield e.g. Africa, Gulf of America with associated additional mobilisation time impact	Longer mobilisation duration, leading to increased relief well drilling timeframe.	This option is considered feasible, however it would result in longer mobilisation timeframes.	Potential for higher cost of mobilisation compared with relief well rigs from local/ regional vicinity.	Considered not to be the primary option given increased mobilisation timeframes compared with mobilising a rig from local/ regional vicinity.. Possible avenue in the event that attempts to mobilise a rig from local/ regional vicinity are not successful.	Evaluate

6.2.6.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical additional control measures identified					

6.2.6.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Monitor internal drilling programs for rig availability	Woodside may be conducting other campaigns that overlap with the Petroleum Activity, potentially providing availability of a relief well drilling rig within Woodside. The environmental benefit of monitoring other drilling programs internally is for Woodside to understand what other rigs may be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	Woodside monitors vessel and MODU availability through market intelligence services. Woodside will continually monitor other drilling and exploration activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	Associated cost of implementation is minimal to the environmental benefit gained. Woodside has outlined control measures and performance standards.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Monitor external activity for rig availability	The environmental benefit achieved by monitoring drilling programs and rig movements across industry provides the potential for increased availability of suitable rigs for relief well drilling. Additional discussions with other Petroleum Titleholders may be undertaken to potentially gain faster access to a rig and reduce the time taken to kill the well and therefore volume of hydrocarbons released.	Woodside will source a relief well drilling rig in accordance with the AEP MOU on rig sharing in the unlikely event this is required. Commercial and operational provisions do not allow Woodside to discuss current and potential drilling programs in detail with other Petroleum Titleholders.	Associated cost of implementation is moderate to the environmental benefit gained. Woodside will continually engage with other Titleholders and Operators regarding activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Monitor status of Registered Operators/ Approved Safety cases for rigs	Woodside can monitor the status of Registered Operators for rigs operating within Australia (and therefore safety case status) on a monthly basis. This allows for a prioritised selection of rigs in the event of a response with priority given to those with an existing safety case.	The environmental benefit of monitoring rigs is for Woodside to understand what other rigs may be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	The cost is minimal.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Create an 'Emergency Response Tactical Response Plan' focused explicitly on meeting the requirements of rig permissioning under accelerated timeframe	NOPSEMA require Safety Case(s) in the event of a relief well scenario. Preparing an Emergency Response Tactical Response Plan with sample Scope of Validations for a variety of rig types and additional required equipment to support relief well drilling (i.e. critical services) may streamline the process for obtaining a Safety Case in the event of a loss of well control scenario.	This option is considered feasible.	Minor administrative cost associated with the development of an Emergency Response Tactical Response Plan and maintaining its currency overtime.	This option provides benefit in terms of streamlining the process for obtaining a Safety Case in the event of relief well rig mobilisation from South East Asia. The ER Tactical Response Plan will contain sample Scope of Validations for a variety of rig types and would include any additional equipment to support relief well drilling (e.g critical services) as well as dynamic kill such as pumps.	Yes

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requirements of a relief well scenario.				The framework will not be populated with rig specifics; these would be updated at the time of source control event.	

6.2.7 Deployment Options Analysis

6.2.7.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.2.7.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Offset capping alternative to conventional capping stack deployment	While the use of an offset capping system could reduce the quantity of hydrocarbon entering the marine environment, the mobilisation lead times for both a capping system and required vessels/ support equipment, would minimise any environmental benefit gained over conventional capping.	The base case considerations for offset installation equipment (OIE) requires a coordinated response by four to seven vessels working simultaneously outside of the 500m exclusion zone, introducing complex SIMOPS issues. Due to the OIE's scale, fabrication of equipment (e.g. mooring anchors) outside of the contractor's scope of supply is likely to require engagement of international suppliers, further increasing complexity and uncertainty in associated time frames. Screening indicates that mobilising some components of the OIE (which are based in Italy) can only be done by sea and is likely to erode any time savings realised through killing the well via a relief well. The March 2019 OSRL exercise in Europe tested deployment of the OIE. It highlighted that a >600 T crane vessel would be required for deployment to allow for a useable hook-height for the crane to conduct the lift of the carrier. Vessels with such capability and a current Australian vessel Safety Case are not locally or readily available.	Due to risks, uncertainty and complexity of this option, and the inability to realise any environmental gains, any cost would be disproportionate to the benefits gained.	Woodside has confidence in availability of suitable relief well MODUs across the required drilling time frame thus the OIE would provide no advantage. Implementation of OIE has been assessed as a complex and unfeasible SIMOPs operation, precluded by a combination of the site-specific metocean and worst-case discharge conditions at the Petroleum Activity location. Implementation of a novel technology such as OIE culminates in low certainty of success while at the same time increasing associated health and safety risks. As such the primary source control response and ALARP position remains drilling a relief well.	No
Dual vessel capping stack deployment	While the use of dual vessel to deploy the capping system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven technology. Additionally, the feasibility issues surrounding a dual vessel capping deployment in the water depths at the GWA Facility Operations well (~132 m), together with mobilisation lead times for both a cap and required vessels and support equipment, would minimise any environmental benefit.	A dual vessel deployment is somewhat feasible provided a large enough deck barge can be located. Deck barges of 120 m are not, however, very common and will present a logistical challenge to identify and relocate to the region. Further, the longer length barges may need mooring assist to remain centred over the well. The capping stack would be handed off from a crane vessel to the anchor handler vessel (AHV) work wire outside of the exclusion zone. The AHV would then manoeuvre the barge into the plume to get the capping stack over the well. In this method, the barge would be in the plume, but the AHV and all personnel would be able to maintain a safe position outside of the gas zone. The capping stack would actually be lowered on the AHV work wire so a crane would not be required on the barge.	Due to there being minimal environmental benefits gained by the prolonged lead times needed to execute this technique, plus a potential increase in safety issues, any cost would be disproportionate to the benefits gained.	Given there is minimal environmental benefit and an increase in safety issues surrounding SIMOPS and deployment in shallow waters, this option would not provide an environmental or safety benefit.	No
Subsea Containment System alternative	While the use of a subsea containment system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven	The timing for mobilisation, deployment and activation of the subsea containment system is likely to be longer (>90 days), than the expected	Woodside has investigated the logistics of reducing this timeframe by pre-positioning equipment but the costs of purchasing dedicated equipment by	This option would not provide an environmental benefit.	No

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Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
to capping stack deployment	technology. Additionally, the system is unlikely to be feasibly deployed and activated for at least 90 days following a blowout due to equipment requirements and logistics. No environmental benefit is therefore predicted given the worst-case release duration of 76 days (MEE-01 Scenario-01) before drilling of a relief well under the adopted control measure.	worst-case release duration of 76 days (MEE-01 Scenario-01) relief well drilling operations based on the location, size and scale of the equipment required, including seabed piles that can only be transported by vessel.	Woodside for this Petroleum Activities Program is not considered reasonably practical and are considered disproportionate to the environmental benefit gained.		
Pre-drill and suspend relief well overburden section, for each well.	Whilst this option may potentially decrease relief well drilling timing, it represents additional environmental impacts associated with discharge of additional drill cuttings and fluids along with benthic habitat disturbance.	This option is not considered feasible due to the uncertainties related to the location and trajectory of the intervention well, which may vary according to the actual conditions at the time the loss of containment event occurs. Top-hole may have to be relocated, due to location being unsafe or unsuitable and further works will be required each year to maintain the top holes.	Not practicable: Cost estimated at ~ $40M per well. Further, the control would not be effective as no relief well rig would be available while drilling pre-drill wells. Significant HSE impact due to increase in drilling and completions operations associated with pre-drilling relief wells.	This option would not provide an environmental benefit due to the additional environmental impacts coupled with a lack of significantly improved relief well timings.	No
Purchase and maintain mooring system	Purchasing and maintaining a mooring system could provide a moderate environmental benefit as it may reduce equipment sourcing time. However, due to the continued need for specialists to install the equipment plus sourcing a suitable vessel, the timeframe reduction would be minimal.	Woodside is not a specialist in installing and maintaining moorings so would require specialists to come in to install the moorings and would also require specialist vessels to be sourced to undertake the work.	The cost of purchasing, storing and maintaining pre-lay mooring systems with anchors, chains, buoys and ancillary equipment is considered grossly disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit as timeframe reductions would be minimal.	No
Contract in place with Wild Well Control and Oceaneering	Woodside has an agreement in place with Wild Well Control Inc and Oceaneering to provide trained personnel in the event of an incident. This will ensure that competent personnel are available in the shortest possible timeframe.	Having contracts in place to access trained, competent personnel in the event of an incident would reduce mobilization times. This option is considered reasonably practicable.	Minimal cost implications – Woodside has standing contract in place to provide assistance across all activities.	This control measure is adopted as the costs and complexity are not considered disproportionate to any environmental benefit that might be realised.	Yes

6.2.7.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Maintaining relief well drilling supplies	There is not predicted to be any reduction in relief well timing or spill duration from Woodside maintaining stocks of drilling supplies (mud, cement, etc.)	It would be feasible to source some relief well drilling supplies such as casing but the actual composition of the cement and mud required will need to be specific to the well. This option is also not deemed necessary as the lead time for sourcing and mobilising these supplies is included in the 21-36 days for sourcing and mobilising a rig.	The capital cost of Woodside purchasing relevant drilling supplies is expected to be approximately $600K with additional costs for storage and ongoing costs for replenishment. These costs are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit.	No

6.2.8 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity.

- Alternative:
  - relief well rig mobilised from South East Asia region
  - mobilise Equinox MODU from Victoria with associated additional time impact and water depth limitations (EVALUATE)
  - mobilise relief well rig from further afield than South East Asia: Africa, GOM with associated additional mobilisation time impact (EVALUATE)
- Additional:
  - contract in place with Wild Well Control and Oceaneering to supply trained, competent personnel
- Improved:
  - monitor internal drilling programs for MODU availability

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- monitor external activity for MODU availability
- monitor status of registered operators / approved Safety cases for MODUs
- create an 'Emergency Response Tactical Response Plan' focused explicitly on meeting the requirements of rig permissioning under accelerated timeframe requirements of a relief well scenario.

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6.3 Source Control via Vessel SOPEP – ALARP Assessment

Alternative, additional and improved options have been assessed against the base capability described in Section 5.3 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.3.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.3.1.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.3.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical additional control measures identified					

6.3.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical improved control measures identified					

6.3.2 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional: none selected
- Improved: none selected

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6.4 Containment and Recovery – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.4.1 Existing Capability – Containment and Recovery

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours/ 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/ re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

Table 6-4: Existing Capability – Containment and Recovery

E	Existing Capability													
E3	Existing level of containment and recovery capability available (m^3 recovered per day)													
Existing capability – Containment and Recovery		**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Week 2**	**Week 3**	**Week 4**	**Month 2**	**Month 3**
	By Volume – m^3												
E3.1	Predicted oil recovered by containment and recovery (lower) – m^3	0	23	23	34	45	56	68	473	630	630	2520	2520
E3.2	Predicted oil recovered by containment and recovery (upper) – m^3	68	135	203	270	405	405	405	3915	4725	4725	18,900	18,900
	By Surface Area– km^2												
E3.3	Predicted surface area treated by containment and recovery (lower) – km^2	0	2	2	3	4	5	6	42	56	56	224	224
E3.4	Predicted surface area treated by containment and recovery (upper) – km^2	1	2	3	4	6	6	6	58	70	70	280	280

For E3 – Containment and Recovery, the range of figures shows the predicted recovery rates of surface oil at 50 g/m² for the lower figures and 200 g/m² for the upper figures using conventional booming systems in a J or U configuration with an encounter rate of 25-50% surface oil meaning 75%-50% of the area within the booming system has surface oil that is not within threshold concentrations <50 g/m²).

6.4.2 Response Planning: GWA Platform loss of well containment scenario (MEE-01 Scenario-02)

The deterministic modelling run showing the minimum time to commencement of oil accumulation at any shoreline receptor (at threshold of 100 g/m²) and for the cumulative oil volume accumulated across all shoreline receptors (at concentrations in excess of 100 g/m²) indicates that first shoreline impact is predicted to occur at Muiron Islands on day 71.4 (6 m^3).

Modelling results at defined response thresholds (>50 g/m²), where containment and recovery is likely to be effective, indicate that the surface area available for feasible response operations will reach a weekly peak of 2 km^2 on day 4. Viscosity alone is unlikely to prevent containment and recovery operations, but very high viscosity combined with low surface concentrations (<50 gm²) are unlikely to continue to provide a net environmental benefit. As this spreading and weathering occur, there will be limitations on available surface area that can be treated as shown in Section 5.4

Table 6-5: GWA Platform loss of well containment scenario (MEE-01 Scenario-02) – Release volumes

GWA Platform loss of well containment scenario (MEE-01 Scenario-02) – Containment and Recovery		**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**	**Week 2**	**Week 3**	**Week 4**	**Month 2**	**Month 3**
	Oil on sea surface												
A	Total volume of oil released (surface) – m^3	240	240	240	240	240	240	240	1,680	1,680	1,512	6,048	5,376
B	Total volume of surface oil remaining after weathering (per day) – m^3	4	4	4	4	4	4	4	27	27	24	97	86

A – This volume represents the total volume of hydrocarbons released from the identified Worst-Case Credible discharge (MEE-01 Scenario-02). The total volume for this spill is released over approximately 68 days at a rate of 10 m^3 / hr

B – The GWA Condensate (GWA03) contains a relatively low proportion (~1.6% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds will persist in the marine environment. The unweathered mixture has a dynamic viscosity of 0.540 *cP. The pour point of the whole oil ensures that it will remain in a liquid state over the annual temperature range observed on the North West Shelf. The mixture is composed of hydrocarbons that have a wide range of boiling points and volatilities at atmospheric temperatures, and which will begin to evaporate at different rates on exposure to the atmosphere. Evaporation rates will increase with temperature, but in general about 71.6% of the oil mass should evaporate within the first 12 hours (BP < 180 °C); a further 19.8% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 7.0% should evaporate over several days (265 °C < BP < 380 °C).*

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Table 6-6: GWA Platform loss of well containment scenario (MEE-01 Scenario-02) – Treatable hydrocarbons

GWA Platform loss of well containment scenario (MEE-01 Scenario-02)		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3
C	**Treatable hydrocarbons following weathering**												
C1	Total volume of surface oil >50 g/m^2 – m^3	0	0	53	115	50	0	0	0	0	0	0	0
C2	Total surface area >50 g/m^2– km^2	0	0	1	2	1	0	0	0	0	0	0	0

C1 – indicates the total remaining volume of hydrocarbons in cubic metres (m^3) on the sea surface above 50 g/m^2. Based on the information outlined in Section 2.3.3 regarding surface concentration thresholds, this is the total volume of oil that can be treated by containment and recovery and surface dispersant spraying operations.

C2 – indicates the total surface area in square kilometres (km^2) of hydrocarbons above 50 g/m^2. This is the total surface area of BAOAC 4 and above that can be treated by containment and recovery and surface dispersant spraying operations.

6.4.2.1 Response Planning Need: GWA Platform loss of well containment scenario (MEE-01 Scenario-02) – Summary

Table 6-7: GWA Platform loss of well containment scenario (MEE-01 Scenario-02) – Response Planning Need

GWA Platform loss of well containment scenario (MEE-01 Scenario-02)		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3
D	**Response Planning Need**												
D1	Bonn Agreement Oil Appearance Code (BAOAC) 5 – Continuous True oil colour												
	Surface area of BAOAC 5 (>200 g/m^2) – km^2	0	0	0	0	0	0	0	0	0	0	0	0
	Volume of surface oil BAOAC 5 (>200 g/m^2) – m^3	0	0	0	0	0	0	0	0	0	0	0	0
D2	Bonn Agreement Oil Appearance Code (BAOAC) 4 – Discontinuous True oil colour												
	Surface area of BAOAC 4 (50-200 g/m^2) – km^2	0	0	1	2	1	0	0	0	0	0	0	0
	Volume of surface oil BAOAC 4 (50-200 g/m^2) – m^3	0	0	53	115	50	0	0	0	0	0	0	0
D3	Bonn Agreement Oil Appearance Code (BAOAC) 3, 2 and 1 – Sheen												
	Volume of surface oil BAOAC 3, 2 and 1 (<50 g/m^2) – m^3	121	172	377	879	984	96	22	501	1,335	89	2138	26

Offshore response operations will always be guided by monitor and evaluate and operational monitoring activities to target the thickest part of the slick, typically BAOAC 5 – continuous true oil colour with a surface oil concentration >200 g/m^2 and BAOAC 4 – discontinuous true oil colour with a surface oil concentration between 50 and 200 g/m^2. For a surface release, the thickest oil is typically in the leading edge of the slick, driven by wind and currents. As the spill continues to weather and spread over a number of days and weeks, the surface concentration and surface area of continuous oil colour spreads and reduces to discontinuous true oil colour and finally sheen as shown above.

The response need is calculated from the surface area and volume of treatable hydrocarbons following weathering as outlined in Table 6-6. Containment and recovery operations would target the leading edge of the slick where surface concentration thresholds are met and/or to target discrete patches of thick oil at BAOAC 4 and 5.

The surface area of thickest oil (BAOAC 4 and 5) available for containment and recovery reaches a peak of approximately 2 km^2 on day 4 only where surface concentration thresholds are met. Within 24 hours, Woodside has available 1 containment and recovery operation capable of recovering up to 68 m^3 surface oil and covering an area of 1 km^2. Availability of containment and recovery operations increases to 2 by day 2, 3 by day 3, 4 by day 4, and 6 by day 5. Thus, by day 5, the recovery capacity is estimated to be up to 405 m^3 covering an area of 6 km^2. If ongoing containment and recovery operations were required and feasible, details of capability from week 2 to month 3 are included in Table 6-4.

Woodside acknowledges that no single response strategy or even combination of offshore response strategies will treat or remove 100% of the surface hydrocarbons in either surface area or volume. Woodside would require the inclusion of other response techniques to be initiated concurrently and recognises that multiple passes from vessels may be required to recover a greater proportion of the oil. Woodside is committed to a realistic, scalable response capability that is commensurate to the level of risk and able to be practically implemented and sustained within the logistical constraints of remote areas.

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6.4.3 Containment and Recovery – Control Measure Options Analysis

6.4.3.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Dedicated Response Vessel in region (exclusive to Woodside)	The environmental benefits associated with containment and recovery are described above. The additional environmental benefit obtained from immediate access to this equipment, permitting deployment as soon as conditions became favourable, would result in a negligible environmental benefit – 11.25-67.5 m^3 of oil recovered per operating unit per day.	Chartering and equipping additional vessels on standby has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when compared with the anticipated effectiveness of dispersant operations to treat the spill which are available from day 2. The effectiveness of this control (encounter rate, weather dependency, availability) is rated as very low.	The cost (A$15 m per annum for the Petroleum Activity) and organisational complexity of employing a dedicated response vessel is considered disproportionate to the insignificant environmental benefit to be realised by implementing this control.	This option is not adopted as it has low effectiveness and cost is disproportionate to the minimal potential environmental benefit.	No
Dedicated Response Vessel in region (shared resource)	The environmental benefit would be similar to that described above for Woodside integrated fleet vessels.	Additional containment and recovery resources and capability can be contracted should the need arise.	The cost and complexity of implementing and maintain this alternative control measure is considered high given the predicted effectiveness. Even with consideration of shared costs, the minor benefit of this control measure does not justify the cost.	This option is not adopted as it has low effectiveness and cost is disproportionate to the minimal potential environmental benefit.	No
Regional oil spill response contractor	This option may achieve minor incremental improvements in surface oil and residual oil volumes similar to those described for integrated fleet vessels. However, given the likely vessel transit times involved to/from the offshore spill location, this option is unlikely to realise material environmental benefits additional the capability selected.	No current private response contracting capability exists that would significantly improve response timing or effectiveness in the Dampier or Exmouth regions.	N/A – not currently feasible	This option is not adopted as it is not currently feasible.	No

6.4.3.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Train additional Woodside personnel in Exmouth to coordinate containment and recovery operations	Limited environmental benefit to be gained by training additional personnel as the number of operations will be governed by the availability of response vessels.	Current capability meets need. Woodside has a pool of trained, competent offshore responders / team leaders at strategic locations to ensure timely and sustainable response. Additional personnel are available through current contracts with AMOSC and OSRL and agreements with AMSA. Marine standards & guidelines ensure vessel masters are competent for their roles. Regular audits of oil spill response organisations ensure training and competency is maintained.	Minor additional cost regarding training and maintenance of competency.	This option is not adopted as the current capability meets the need.	No

6.4.3.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Prioritise rapid sweep systems (NOFI Buster series, Desmi Speed Sweep, etc.) for	Although each rapid sweep containment and recovery operation could remove an additional 10-45 m^3 per operation per day, the environmental benefit of containment and recovery as a response technique is minor. This response technique is not considered to be as effective as surface dispersant	Rapid sweep systems allow containment and recovery operations to be undertaken at speeds of up to 3 knots. This allows for greater encounter rates and surface coverage. AMOSC has recently purchased a Speed Sweep system and a number of NOFI systems are available through Mutual Aid arrangements.	Additional costs for prioritising rapid sweep systems are negligible	Although containment and recovery remains a low-efficiency response technique, this control measure is adopted as the costs and complexity are not considered disproportionate to any environmental benefit that might be realised.	Yes

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mobilisation from service providers	application to prevent hydrocarbons reaching the shore.				
Prioritise active booming systems (Ro-skim, etc.) for mobilisation from service providers	Although each active booming system could remove an additional 10-45 m^3 per operation per day, the environmental benefit of containment and recovery as a response technique is minor. This response technique is not considered to be as effective as surface dispersant application to prevent hydrocarbons reaching the shore.	Active booming systems allow containment and recovery operations without the need for an additional skimming system. This allows for greater effectiveness and continued skimming operations. Active booming systems are available through OSRL and Mutual Aid arrangements and would be prioritised for mobilisation.	Additional costs for prioritising active booming systems are negligible	Although containment and recovery remains a low-efficiency response technique, this control measure is adopted as the costs and complexity are not considered disproportionate to any environmental benefit that might be realised.	Yes
Pre-position additional containment and recovery equipment (Exmouth)	It is unlikely that faster mobilisation and deployment from Exmouth would significantly increase response effectiveness or removal of oil to create an increased environmental benefit	Facilities at Exmouth are currently limited by tides and draft for the loading and unloading of vessels with heavy plant and equipment. Access to the Navy Pier to provide an additional loading location is subject to Defence Force approval and cannot be relied upon for rapid approval in the event of an oil spill.	Limited additional cost considerations.	This option is not adopted as the complexity is disproportionate to the minimal potential environmental benefit due to the low efficiency of containment and recovery as a response technique.	No
Re-locate containment and recovery equipment on in-field vessels	The additional environmental benefit obtained from faster mobilisation and deployment would be limited by safety considerations during the initial period following the release. Once operations were considered safe, the vessels would increase recovery capacity to 11.25-67.5 m^3/day per operation. The limited oil treatment of containment and recovery and expected effectiveness of dispersant application from vessels indicates the preference would be for greater surface dispersant application capability.	Operations close to the release location are unlikely to be feasible during the initial period due to the uncertainty of the situation and potential safety impacts on personnel. Vessels may require time to return to port and load equipment, fuel etc. to allow response duration to be the maximum possible once deployed. Shortening the timeframes for vessel availability would require equipment to be pre-positioned on-board vessels.	The cost and organisational complexity of employing two dedicated response vessels (approximately A$15 m per year per vessel) is considered disproportionate to the limited environmental benefit to be realised by adopting this control	This option is not adopted as the cost is disproportionate to the minimal potential environmental benefit due to the low efficiency of containment and recovery as a response technique.	No
Purchase or pre-position larger skimmers	The environmental benefit of containment and recovery for the loss of well control scenario is minor. This response strategy is not considered to be as effective as surface dispersant application to prevent hydrocarbons reaching the shore.	Larger systems such as the Desmi Octopus or Transrec with >200 m^3 per hour capacity, could improve recovery rates, however are not readily available in Australia and not easily compatible with booming, waste and hydraulic power systems. If required and deemed to be of benefit, these systems are available through Service Providers such as OSRL.	Cost of purchasing Octopus system is A$600,000 plus additional transport, training and commissioning costs and ongoing maintenance costs. Cost for pre-positioning in Australia for the life of the asset/activity is greater than the purchase costs.	This option is not adopted as the cost is disproportionate to the minimal potential environmental benefit due to the low efficiency of containment and recovery as a response technique.	No

6.4.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional:
  - Prioritise rapid sweep systems (NOFI Buster series, Desmi Speed Sweep, etc.) for mobilisation from service providers
  - Prioritise active booming systems (Ro-skim, etc.) for mobilisation from service providers
- Improved: none selected

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6.5 Shoreline Protection and Deflection – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 Existing Capability – Shoreline Protection and Deflection

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft/ vehicle location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/ pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.5.2 Response Planning: GWA Platform loss of well containment scenario (MEE-01 Scenario-02) – Shoreline Protection and Deflection

Planning for shoreline protection is based upon identification of Response Protection Areas (RPAs) from deterministic modelling and the logistics associated with deploying protection at these locations. The response planning scenarios indicate that this would require effective mobilisation to priority shorelines and maintenance of protection until monitor and evaluate confirms that the locations were no longer at risk. Woodside has identified the RPAs from deterministic modelling results provided from specific scenarios. The full list of RPAs predicted to be contacted by oil above response thresholds are detailed in Table 3-1.

The control measures selected provide capability to mobilise shoreline protection equipment within 24 hours (if required). Modelling predicts that only MEE-01 Scenario-02 may result in shoreline contact at response thresholds (>100 g/m2). The deterministic modelling run demonstrating the minimum time to shoreline contact at a threshold of >100 g/m^2 and the run with the greatest number of locations with accumulations at >100 g/m^2 (both Q2, Run 2) has been selected for response planning and are combined in Table 6-8 below. Initial contact is predicted within 71.4 days at Muiron Islands.

Tactical response plans exist for the RPAs identified. The plans identify values and sensitivities that would be protected at location. To allow for the best use of available shoreline protection and deflection resources, monitor and evaluate and operational monitoring activities will inform the response, targeting RPAs where contact is predicted above response threshold levels.

Table 6-8 below outlines the capability required (number of RPAs predicted to be impacted) against the capability available (number of shoreline protection and deflection operations that can be mobilised and deployed).

Table 6-8: Response Planning – Shoreline Protection and Deflection (MEE-01 Scenario-02)

GWA Platform loss of well containment scenario (MEE-01 Scenario-02)		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3
	Oil on shoreline (from deterministic modelling) m^3	0	0	0	0	0	0	0	0	0	0	0	6
A	Capability Required												
A1	Number of RPAs contacted (> 100 g/m^2)	0	0	0	0	0	0	0	0	0	0	0	1
B	Capability Available (operations per day)												
B1	SPD operations available – per day (lower)	0	15	15	20	20	20	20	105	105	105	560	560
B2	SPD operations available – per day (upper)	0	15	15	20	20	20	20	140	140	140	560	560
C	Capability Gap (operations per day)												
C1	SPD operations gap – per day (lower)	0	0	0	0	0	0	0	0	0	0	0	0
C2	SPD operations gap – per day (upper)	0	0	0	0	0	0	0	0	0	0	0	0

A1 – the number of Response Protection Areas contacted by surface hydrocarbons above 100 g/m^2

B1 and B2 – the upper and lower number of shoreline protection and deflection operations available (based on response planning assumptions in Section 5.5),

C1 and C2 – the gap between the upper and lower number of shoreline protection and deflection operations required in A1 compared to the operations available in B1 and B2

Table 6-9 presents the indicative tactical response plan for the identified RPAs.

Table 6-9: Indicative Tactical response plan, aims and methods for identified RPAs

Tactical Response Plan	Response aims and methods
Muiron Islands	**First response aim:** Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident **Second response aim**: Pre-clean of potential impact areas (if time allows) using rakes and shovels to move any debris above the high tide line and then segregate appropriately **Third response aim**: Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate **Fourth response aim**: Collection and specialist cleaning/rehabilitation of oiled wildlife

Pre-emptive mobilisation of equipment and personnel would commence as soon as practicable prior to oil contact. Additional resources would be mobilised depending on the scale of the event to increase the length or number of shorelines being protected.

A shoreline protection and deflection response would be launched only when monitoring and modelling indicate that contact could occur and monitor and evaluate operations identify spill heading towards RPA(s).

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6.5.3 Shoreline Protection and Deflection – Control Measure Options Analysis

6.5.3.1 Alternative Control Measures

Alternative Control Measures considered Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Pre-position equipment at Response Protection Areas (RPAs)	Additional environmental benefit of having equipment prepositioned is considered minor. Equipment is currently available to protect RPAs and additional shorelines, within estimated minimum times until shoreline contact at RPAs, enabling mobilisation of the selected delivery options.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised. Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options. The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost to preposition protection/ deflection packages at each site of potential impact would be approx. A$6,100 per package per day.	This option is not adopted as the existing capability meets the need.	No

6.5.3.2 Additional Control Measures

Additional Control Measures considered Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Supplemented stockpiles of equipment in Exmouth to protect additional shorelines	Additional equipment would increase the number of receptor areas that could be protected from hydrocarbon contact. However, current availability of personnel and equipment is capable of protecting up to 30 km of shoreline, commensurate with the scale and progressive nature of shoreline impact. Additional stocks would be made available from international sources if long term up scaling were necessary. A reduction in environmental consequence from a 'B' rating (serious long-term impacts) is unlikely to be realised as a result of having more equipment available locally.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised. Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options. The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost for purchase supplemental protection and deflection equipment would be approximately. A$455,000 per package.	This option is not adopted as the existing capability meets the need.	No
Additional trained personnel	The level of training and competency of the response personnel allows the shoreline protection and deflection operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside People & Global Capability Surge Labour Requirement Plan. Additional personnel sourced from contracted OSRO's (OSRL/AMOSC) to manage other responders. Response personnel are trained and exercised regularly in shoreline response techniques and methods. All personnel involved in a response will	Additional Specialist Personnel would cost A$2,000 per person per day.	This option is not adopted as the existing capability meets the need.	No

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		receive a full operational/safety briefing prior to commencing operations.			

6.5.3.3 Improved Control Measures

Improved Control Measures considered Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response/ mobilisation time	Given modelling does not predict floating or shoreline impacts at threshold until day 71.4 [MEE-01 Scenario-02], Woodside considers that there is sufficient time for deployment of protection and deflection operations prior to impact.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days. Hydrocarbons are not predicted to accumulate at threshold until day 71.4 at Muiron Islands [MEE-01 Scenario-02] therefore allowing enough time to re-locate existing equipment, personnel and other resources to the most appropriate areas.	The cost of establishing a local stockpile of new mitigation equipment (including protection and deflection boom) closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as the existing capability meets the need.	No

6.5.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional: none selected
- Improved: none selected

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6.6 Shoreline Clean-up – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5.6 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.6.1 Existing Capability – Shoreline Clean-up

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft/ vehicle location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/ re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.6.2 Response planning: GWA Facility Operations – Shoreline Clean-up

Woodside has assessed existing capability against the WCCS and has identified that the range of techniques provide an ongoing approach to shoreline clean-up at identified RPAs. Woodside's capability can cover the required shoreline clean-up operations for the Petroleum Activity.

Shoreline contact is only predicted for the GWA Platform loss of well containment scenario (MEE-01 Scenario-02). For this scenario, the deterministic modelling run demonstrating the minimum time to shoreline contact at a threshold of >100 g/m^2 and the run with the greatest number of locations with accumulations at >100 g/m^2 (both Q2 Run 2) has been selected for response planning and the results are detailed in Table 6-10 below. Contact is predicted within 71.4 days at Muiron Islands (6 m^3) only therefore Woodside is satisfied that the current capability is managing risks and impacts to ALARP. These volumes assume no treatment of floating surface oil by containment and recovery prior to contact so are considered very conservative. The full list of RPAs predicted to be contacted by oil is detailed in Table 3-1 and relevant Tactical Response Plans available for identified RPAs are included in Table 6-9.

Due to the time of contact predicted, this response may not be as time critical compared to other response techniques and the scale will depend on the success of other techniques preventing oiling occurring. Further, the potential scale and remoteness of a response coupled with the uncertainty of which locations will be affected precludes the stockpiling or prepositioning of equipment specific to shorelines. The most significant constraint is accommodation and transport of personnel in Exmouth to undertake clean-up operations and to manage wastes generated during the response effort. From previous assessment of facilities in Exmouth, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day.

Table 6-10 below outlines the capability required (volume of oil on the shoreline) against the capability available (number of shoreline clean-up operations that can be mobilised and deployed). This capability is based upon Woodside's access to local response personnel and equipment. In the event of a protracted or worst-case event, Woodside has access to national and international response personnel and equipment which would be scaled to meet the response need. These volumes assume that no offshore mitigations have been applied.

Woodside has identified several options which could be mobilised to achieve defined response objectives. Evaluation considers the benefit in terms of the time to respond and the scale of response made possible by each option. The evaluation of possible control measures is summarised in Section 6.6.3.

Table 6-10: Response Planning – Shoreline Clean-up

Shoreline Clean-up (Phase 2)		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Week 2	Week 3	Week 4	Month 2	Month 3	Month 4
Oil on shoreline (from deterministic modelling) m^3														
	Shoreline accumulation (above 100 g/m^2) - m^3	0	0	0	0	0	0	0	0	0	0	0	6	0
	Oil remaining following response operations - m^3	0	0	0	0	0	0	0	0	0	0	0	0	3
A	Capability Required (number of operations)													
A1	SCU operations required (lower)	0	0	0	0	0	0	0	0	0	0	0	1	0
A2	SCU operations required (upper)	0	0	0	0	0	0	0	0	0	0	0	3	2
B	Capability Available (number of operations)													
B1	SCU operations available - Stage 2 - Manual (lower)	0	15	15	20	20	20	20	105	105	105	560	560	560
B2	SCU operations available - Stage 2 - Manual (upper)	0	15	15	20	20	20	20	140	140	140	560	560	560
C	Capability Gap													
C1	SCU operations gap (lower)	0	0	0	0	0	0	0	0	0	0	0	0	0
C2	SCU operations gap (upper)	0	0	0	0	0	0	0	0	0	0	0	0	0

A1 and A2 – the number of Shoreline Clean-up operations required based on the hydrocarbon volumes ashore above 100 g/m^2

B1 and B2 – the upper and lower number of shoreline clean-up operations available (based on response planning assumptions in Section 5.6),

C1 and C2 – the gap between the upper and lower number of shoreline clean-up operations required in A1 and A2 compared to the operations available in B1 and B2

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6.6.3 Shoreline Clean-up – Control measure options analysis

6.6.3.1 Alternative Control Measures

Alternative Control Measures considered Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.6.3.2 Additional Control Measures

Additional Control Measures considered Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional trained personnel available	The level of training and competency of the response personnel ensures the shoreline clean-up operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside People & Global Capability Surge Labour Requirement Plan. Additional personnel sourced from contracted OSROs (OSRL/AMOSC) to manage other responders Response personnel are trained and exercised regularly in shoreline response techniques and methods. All personnel involved in a response will receive a full operational/safety brief prior to commencing operations.	Additional Specialist Personnel would cost A$2,000 per person per day.	This option is not adopted as the existing capability meets the need.	No
Additional trained personnel deployed	Maintaining a span of control of 200 competent personnel is deemed manageable and appropriate for this activity. Additional personnel conducting clean-up activities may be able to complete the clean-up in a shorter timeframe, but modelling predicts ongoing stranding of hydrocarbons over a period of weeks. Managing a smaller, targeted response is expected to achieve an environmental benefit through ensuring the shoreline clean-up response is suitable and scalable for the shoreline substrate and sensitivity type. This will ensure there is no increased impact from the shoreline clean-up through the presence of unnecessary personnel and equipment.	The figure of 200 personnel is broken down to include on 1-2 x Trained Supervisors managing 8-10 personnel/labour hire responders. This allows for multiple operational teams to operate along the extended shoreline at different locations. Typically, an additional 30-50% of the tactical workforce is required to support ongoing operations including On-Scene control, logistics, safety/medical/welfare and transport. Personnel on site will include members with the appropriate specialties to ensure an efficient shoreline clean-up. Additional personnel are available through existing contracts with oil spill response organisations, labour hire organisations and environmental panel contractors	Additional Specialist Personnel would cost A$2,000 per person per day.	This option is not adopted as the existing capability meets the need.	No

6.6.3.3 Improved Control Measures

Improved Control Measures considered Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response/ mobilisation time	Given modelling does not predict floating or shoreline impacts at threshold until day 71.4 (MEE-01 Scenario-02), Woodside considers that there is sufficient time for deployment of clean-up operations prior to impact.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48 hrs of activation. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.	The cost of establishing a local stockpile of new shoreline clean-up equipment closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as the existing capability meets the need.	No

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		Hydrocarbons are not predicted to accumulate at threshold until day 71.4 at Muiron Islands (MEE-01 Scenario-02) therefore allowing enough time to re-locate existing equipment, personnel and other resources to the most appropriate areas.			

6.6.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional: none selected
- Improved: none selected

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6.7 Oiled Wildlife Response – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.7.1 Existing Capability – Wildlife Response

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.7.2 Oiled Wildlife Response - Control Measure Options Analysis

6.7.2.1 Alternative Control Measures

Alternative Control Measures considered Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Direct contracts with service providers	This option duplicates the capability accessed through AMOSC and OSRL and would compete for the same resources. Does not provide a significant increase in environmental benefit.	These delivery options provide increased effectiveness through more direct communication and control of specialists. However, no significant net benefit is anticipated.	Duplication of capability – already subscribed to through contracts with AMOSC and OSRL	This option is not adopted as the existing capability meets the need.	No

6.7.2.2 Additional Control Measures

Additional Control Measures considered Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Additional wildlife treatment systems	The selected delivery options provide access to call-off contracts with selected specialist providers. The agreements ensure that these resources can be mobilised to meet the required response objectives, commensurate with the progressive nature of environmental impact and the time available to monitor hydrocarbon plume trajectories. Provides response equipment and personnel by Day 3. The additional cost in having a dedicated oiled wildlife response (equipment and personnel) in place is disproportionate to environmental benefit. These selected delivery options provide capacity to carry out an oiled wildlife response if contact is predicted; and to scale up the response if required to treat widespread contamination. Current capability meets the needs required and there is no additional environmental benefit in adopting the improvements.	Although hydrocarbon contact above wildlife response threshold concentrations (>10 g/m2) with offshore waters is expected from day one, given the low likelihood of such an event occurring and that the current capability meets the need, the cost of implementing measures to reduce the mobilisation time is considered disproportionate to the benefit. Additionally, the remote offshore location of the release site, with an earliest impact on day 71, provides sufficient opportunity for the ongoing monitoring and surveillance operations to inform the scale of the response. Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. Oiled wildlife response capacity would be addressed for open Commonwealth waters through the AMOSC arrangements, as informed by monitor and evaluate. The cost and organisational complexity of this approach is moderate, and the overall delivery effectiveness is high.	Additional wildlife response resources could total A$1,700 per operational site per day.	This option is not adopted as the existing capability meets the need.	No
Additional trained wildlife responders	Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. The potential environmental benefit of training additional personnel is expected to be low.	Current numbers meet the needs required and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. Additional equipment and facilities would be required to support ongoing response, depending on the scale of the event and the impact to wildlife and maybe sourced via existing contracts with	Additional wildlife response personnel cost A$2,000 per person per day	This option is not adopted as the existing capability meets the need.	No

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		OSROs. Materials for holding facilities, portable pools, enclosures and rehabilitation areas would be sourced as required.			

6.7.2.3 Improved Control Measures

Improved Control Measures considered Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster mobilisation time for wildlife response	Response time is limited by specialist personnel mobilisation time. Current timing is sufficient for expected first shoreline contact. This control measure provides increased effectiveness through faster mobilisation of specialists. However, no significant net environmental benefit is expected due to shoreline stranding times.	Pre-positioning vessels or equipment would reduce mobilisation time for oiled wildlife response activities. However, given the effectiveness of an oiled wildlife response is expected to be low, an earlier response would provide a marginal increase in environmental benefit.	Wildlife response packages to preposition at vulnerable sites identified through the deterministic modelling cost A$700 per package per day. The cost of having dedicated equipment and personnel available to respond faster is considered disproportionate to the environmental benefit.	This option is not adopted as the existing capability meets the need.	No

6.7.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional: none selected
- Improved: none selected

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6.8 Waste Management – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.8.1 Existing Capability – Waste Management

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.8.2 Waste Management - Control Measure Options Analysis

6.8.2.1 Alternative Control Measures

Alternative Control Measures considered

Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified					

6.8.2.2 Additional Control Measures

Additional Control Measures considered

Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Increased waste storage capability	The procurement of waste storage equipment options on the day of the event will allow immediate response and storage of collected waste. The environmental benefit of immediate waste storage is to reduce ecological consequence by safely securing waste, allowing continuous response operations to occur.	Access to Veolia's storage options provides the resources required to store and transport sufficient waste to meet the need. Access to waste contractors existing facilities enables waste to be stockpiled and gradually processed within the regional waste handling facilities. Additional temporary storage equipment is available through existing contract and arrangements with OSRL. Existing arrangements meet identified need for the Petroleum Activity.	Cost for increased waste disposal capability would be approx. A$1,300 per m^3. Cost for increased onshore temporary waste storage capability would be approx. A$40 per unit per day.	This option is not adopted as the existing capability meets the need.	No

6.8.2.3 Improved Control Measures

Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response time	The access to Veolia waste storage options provides the resources to store and transport waste, permitting the wastes to be stockpiled and gradually processed within the regional waste handling facilities. Bulk transport to Veolia's licensed waste management facilities would be undertaken via controlled-waste-licensed vehicles and in accordance with Environmental Protection (Controlled Waste) Regulations 2004. The environmental benefit from successful waste storage will reduce pressure on the treatment and disposal facilities reducing ecological consequences by safely securing waste. In addition, waste storage and transport will allow continuous response operations to occur.	Woodside already maintains an equipment stockpile in Exmouth to enable shorter response times to incidents. This stockpile includes temporary waste storage equipment. Woodside has access to stockpiles of waste storage and equipment in Dampier and Exmouth through existing contracts and arrangements.	The incremental benefit of having a dedicated local Woodside owned stockpile of waste equipment and transport is considered minor and cost is considered disproportionate to the benefit gained given predicted shoreline contact times.	This option is not adopted as the existing capability meets the need.	No

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Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
	This delivery option would increase known available storage, eliminating the risk of additional resources not being available at the time of the event. However, the environmental benefit of Woodside procuring additional waste storage is considered minor as the risk of additional storage not being available at the time of the event is considered low and existing arrangements provide adequate storage to support the response.				

6.8.3 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity.

- Alternative: none selected
- Additional: none selected
- Improved: none selected

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6.9 Operational and Scientific Monitoring – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation which are highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.9.1 Existing Capability – Operational and Scientific Monitoring

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/ vessel/ aircraft/ vehicle location and duties, survey or classification society inspection requirements, overflight/ port/ quarantine permits and inspections, crew/ pilot duty and fatigue hours, refuelling/ re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.9.2 Operational and Scientific Monitoring – Control Measure Options Analysis

6.9.2.1 Alternative Control Measures

Alternative Control Measures considered *Alternative control measures including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Dedicated contracted OSM vessel (exclusive to Woodside)	Would provide marginally faster mobilisation time of first-strike monitoring resources. However, the timescale difference would be limited when compared to the availability of in-field support vessels which are equipped with water quality sampling equipment, meaning it would result in very minor to no environmental benefit.	Chartering and equipping additional vessels on standby for operational and scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when existing contracted support vessels can be equipped with water quality sampling equipment. Additionally, vessels are not the limiting factor in deployment times, as the majority of operational and scientific monitoring components require trained specialists, who can take >72 hours to mobilise.	The cost and organisational complexity of contracting a dedicated response vessel is considered disproportionate to the marginal environmental benefit by adopting these delivery options.	This control measure is not adopted as the costs and complexity are considered disproportionate to any environmental benefit that might be realised.	No

6.9.2.2 Additional control measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Pre-position a team of trained scientific monitoring personnel on standby in Dampier	Pre-positioning a team of trained scientific monitoring personnel closer to the spill location would result in quicker mobilisation times for one or two priority OMPs or SMPs to be implemented.	A trained team of scientific monitoring personnel positioned in Dampier could result in a more rapid deployment of initial monitoring. However, this option is reliant on suitable vessels being readily available in Dampier and not requiring relocation from nearby ports or adjacent offshore locations.	The costs of having a small team of trained scientific monitoring personnel available on standby in Dampier would be in excess of $3-4M / annum and would be an associated cost to the activity whether there was a spill or not.	The cost of maintaining a team of trained scientific monitoring personnel on standby in Dampier is considered disproportionate, as multiple teams of trained personnel are required to implement multiple OMPs and SMPs. It is considered more cost effective and feasible to pre-position first strike sampling kits on support vessels (see below).	No
Contract additional OSM Service Providers to increase availability of monitoring personnel in the first 2 weeks of the spill	The availability of additional monitoring personnel could theoretically increase the number of receptors and locations able to be monitored, however, the ability to deploy personnel would be subject to a range of feasibility considerations.	This option has been considered and evaluated; however, it has been discounted on the basis that deploying a significantly larger number of monitoring teams concurrently with response operations would introduce additional safety, environmental, and operational risks. The current resource assessment within ANNEX C: Petroleum Activity OSM Activity Specific Requirement and Verification of OSM-BIP Adequacy indicates that up to 27 monitoring teams may be required during the initial two weeks of the response. Expanding this effort further by engaging additional contracted monitoring teams would likely result in increased simultaneous operations (SIMOPs), elevating the potential for vessel interactions, collision risks, anchoring impacts, and waste discharges, thereby increasing the overall risk profile.	Cost to contract an additional OSM Service Provider.	The option to contract an additional OSM Service Provider to increase the number of contracted monitoring teams during the initial stages of the spill response has been assessed and found not to be reasonably practicable due to the elevated safety and environmental risks associated with SIMOPs, including vessel collisions, anchoring impacts, and waste discharges. These risks outweigh the marginal benefit of increased early-stage monitoring coverage, particularly given the scale of the existing response and monitoring deployment already planned.	No

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Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
		To ensure risk remains ALARP, a staged and scalable approach to resourcing has been adopted. Should additional monitoring capacity be required from week 3 onwards, this will be identified early through ongoing review of monitor and evaluate activities and existing monitoring efforts. Woodside will activate additional resourcing via its existing contract with the OSM Services Provider, thereby ensuring a streamlined and controlled expansion of effort. By this stage of the response, operational response activities are expected to have stabilised, reducing the likelihood and severity of SIMOPs-related risks. In addition, efficiencies may be gained by reallocating existing monitoring teams to other priority receptors where monitoring is still required, particularly in cases where termination criteria have been met at initial locations. This dynamic resourcing approach ensures that additional personnel are only deployed when necessary, thereby supporting both environmental and safety performance outcomes and maintaining ALARP principles throughout the monitoring program.			
Purchase initial water quality / hydrocarbon sampling kits for pre-positioning on nearby support vessels and develop technical procedure for sample collection	The availability of initial water quality / hydrocarbon sampling kits on nearby support vessels (and an accompanying technical procedure for sample collection) will provide an opportunity for more rapid initial measurements of hydrocarbon properties and concentrations. This information will provide important initial situational awareness information that will aid decision making in both monitoring and response efforts.	This control measure will improve the availability and timeframe for initial water quality sampling.	Implementing this additional control measure will involve time and effort to source and supply initial sampling kits to the selected supply vessels. There will also be employee time involved in developing and conducting training to vessel crews on the technical procedure for sample collection.	Adoption of this control measure will provide an additional and quicker opportunity for initial water quality sampling, resulting in improved situational awareness for decision making in monitoring and response teams.	Yes
Modify Woodside Aerial Surveillance Observer Log to enable observers to record marine fauna sightings (presence and type of fauna)	Initial aerial surveillance provides important information for decision making in response operations, but can also provide important initial environmental monitoring data. Amending the Woodside Aerial Surveillance Observer Log to include the ability to report on location, presence and type of fauna could assist in a more rapid, effective deployment of specialised OMP teams for Marine Fauna Assessment and Oiled Wildlife Response.	This control measure is considered reasonably practicable to implement.	Cost to modify the Aerial Surveillance Observer Log is minimal and is associated with time and effort of existing employees.	Adoption of this control measure is considered to be beneficial as it could assist in more effective and efficient deployment of fauna monitoring and response efforts.	Yes
Conduct periodical review of existing baseline data sources across receptors predicted to be contacted within 7 days at the low thresholds and a probability ≥10%	This ensures that receptors with deficient baseline data are identified. This a consideration for first-strike monitoring prioritisation and the finalisation of each SMP design	This control measure is considered reasonably practicable to implement.	Cost of contract with Service Provider.	Understanding the presence or absence, suitability and quality of baseline data for receptors predicted to be contacted within 7 days, at a probability ≥ 10%, is an important preparatory measure. Understanding which receptors have insufficient baseline data will help quickly guide monitoring prioritisation and the finalisation of each SMP design and whether there is a need to include alternative designs.	Yes

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6.9.2.3 Improved Control Measures considered

Improved Control Measures considered *Improved control measures, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Adoption of the OSRL OSM Supplementary Service Agreement for OSM capability provision	A Joint Industry capability provision has considerable benefits, including an improvement to industry OSM standards; improved reliability in accessing specialist personnel; efficiencies and capability growth associated with shared testing and exercising; and greater depth in Monitoring Service Provider (MSP) capability, with a centralised contract coordinating multiple consultancies and MSPs.	This control measure has already been developed by Industry and is considered reasonably practicable to implement.	Cost of annual subscription to OSRL OSM Supplementary Service Agreement	Adopting this control measure involves additional costs, but the benefits of a Joint Industry OSM capability provision outweighs the costs and therefore this additional measure has been accepted.	Yes
Determine the required specifications for suitable monitoring vessels, including specialised equipment for OMPs and SMPs (i.e. hiab) and the requirement of shallow draft vessels to access offshore islands and priority monitoring areas	Understanding vessel specification requirements for OSM at priority locations will result in quicker mobilisation times, and more effective monitoring, as correctly equipped vessels will be made available at the commencement the monitoring effort.	This control measure is considered reasonably practicable to implement.	Cost to determine vessel specifications is minimal and is associated with time and effort of existing employees.	This control measure would result in the correct vessels being mobilised for monitoring personnel and result in quicker implementation of monitoring.	Yes

6.9.3 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the Petroleum Activity:

- Alternative: none selected
- Additional:
  - purchase water quality / hydrocarbon sampling kits for pre-positioning on nearby support vessels and develop technical procedure for sample collection
  - modify Woodside Aerial Surveillance Observer Log to enable observers to record marine fauna sightings (presence and type of fauna)
  - conduct periodical review of existing baseline data sources for receptors predicted to be contacted within 7 days, at the low thresholds and a probability ≥ 10%.
- Improved: none selected
  - adoption of the OSRL OSM Supplementary Service Agreement for OSM capability provision
  - determine the required specifications for suitable monitoring vessels, including specialised equipment for OMPs and SMPs (i.e. hiab) and the requirement of shallow draft vessels to access offshore islands and priority monitoring areas.

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6.9.4 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
Operational and Scientific Monitoring		
ALARP Summary	X	Known, reasonably practicable control measures have been adopted
	X	No additional, alternative and improved control measures would provide further benefit
	X	No reasonably practical additional, alternative, and/or improved control measure exists
	The resulting operational and scientific monitoring capability has been assessed against the credible spill scenarios. The range of techniques provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. Known, reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be Moderate and the overall delivery effectiveness considered Medium. The operational and scientific monitoring's main objectives can be met, with the addition of one alternative control measures to provide further benefit.	
Acceptability Summary	The control measures selected for implementation manage the potential impacts and risks to ALARP. In the event of a hydrocarbon spill for the Petroleum Activity, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice. Operational and scientific monitoring control and activities are compliant with relevant environmental legislation and regulations, including the EPBC Act. Throughout the Petroleum Activity, relevant Australian standards and codes of practice will be followed to evaluate the impacts from a loss of well control. Stakeholder consultation undertaken for the Petroleum Activity did not receive feedback regarding concerns for Scientific Monitoring activities in response to a hydrocarbon spill. The level of impact and risk to the environment has been considered with regards to the principles of ESD; and risks and impacts from a range of identified scenarios were assessed in detail. The control measures described consider the conservation of biological and ecological diversity, through both the selection of control measures and the management of their performance. The control measures have been developed to account for credible case scenarios, and uncertainty has not been used as a reason for postponing control measures.	
On the basis from the ALARP and acceptability summary as presented above and in Sections 6.7 and 6.8 of the EP Woodside considers the adopted controls discussed manage the impacts and risks associated with implementing operational and scientific monitoring activities to a level that is ALARP and acceptable.		

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7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and Acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- atmospheric emissions
- routine and non-routine discharges
- physical presence, proximity to other vessels (shipping and fisheries)
- routine acoustic emissions vessels
- lighting for night work/navigational safety
- invasive marine species
- collision with marine fauna
- disturbance to seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- drill cuttings and drilling fluids environmental impact assessment for relief well drilling
- vessel operations and anchoring
- presence of personnel on the shoreline
- human presence (manual cleaning)
- vegetation cutting
- additional stress or injury caused to wildlife
- secondary contamination from the management of waste

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

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Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
Source control		✓	✓	✓	✓	✓	✓
Containment and recovery			✓		✓	✓	✓
Shoreline protection and deflection	✓	✓	✓		✓	✓	✓
Shoreline clean-up	✓	✓	✓		✓	✓	✓
Oiled wildlife					✓	✓	
Operational and scientific monitoring	✓	✓	✓	✓	✓	✓	✓
Waste management	✓			✓	✓	✓	✓

7.3 Evaluation of impacts and risks from implementing response techniques

Drill cuttings and drilling fluids environmental impact assessment for relief well drilling

The identified potential impacts associated with the discharge of drill cuttings and fluids during a relief well drilling activity include a localised reduction in water and seabed sediment quality, and potential localised changes to benthic biota (habitats and communities).

A number of direct and indirect ecological impact pathways are identified for drill cuttings and drilling fluids as follows:

- temporary increase in total suspended solids (TSS) in the water column;
- attenuation of light penetration as an indirect consequence of the elevation of TSS and the rate of sedimentation;
- sediment deposition to the seabed leading to the alteration of the physio-chemical composition of sediments, and burial and potential smothering effects to sessile benthic biota; and
- potential contamination and toxicity effects to benthic and in-water biota from drilling fluids.

Potential impacts from the discharge of cuttings range from the complete burial of benthic biota in the immediate vicinity of the well site due to sediment deposition, smothering effects from raised sedimentation concentrations as a result of elevated Total Suspended Solids (TSS), changes to the physico-chemical properties of the seabed sediments (particle size distribution and potential for reduction in oxygen levels within the surface sediments due to organic matter degradation by aerobic bacteria) and subsequent changes to the composition of infauna communities to minor sediment loading above background and no associated ecological effects. Predicted impacts are generally confined to within a few hundred metres of the discharge point (International Association of Oil and Gas Producers 2016) (i.e. within the EMBA for a hydrocarbon spill event).

The discharge of drill cuttings and unrecoverable fluids from relief well drilling is expected to increase turbidity and TSS levels in the water column, leading to an increased sedimentation rate above ambient levels associated with the settlement of suspended sediment particles near to the seabed or below sea surface, depending on location of discharge. Cuttings with retained (unrecoverable) drilling fluids are discharged below the water line at the MODU location, resulting in drill cuttings and drilling fluids rapidly diluting, as they disperse and settle through the water column. The dispersion and fate of the cuttings is determined by particle size and density of the retained (unrecoverable) drilling fluids, therefore, the sediment particles will primarily settle in proximity to the well locations with potential for localised spread downstream (depending on the speed of

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currents throughout the water column and seabed) (IOGP 2016). The finer particles will remain in suspension and will be transported further before settling on the seabed.

These conclusions were supported by discharge modelling which was undertaken by Woodside in support of the Greater Enfield Development EP Modelling results indicating that the TSS plume of suspended cuttings will typically disperse to the south-west while oscillating with the tide and diminish rapidly with increasing distance from the well locations. Maximum TSS concentrations predicted for 100 m; 250 m and 1 km distances from the wellsite were 7, 5 and 1 mg/L, respectively. Furthermore, water column concentrations below 10 mg/L remain within 235 m of the discharge location for each modelled well. For all well discharge locations (outside of direct discharge sites), TSS concentration did not exceed 10 mg/l. Nelson et al. (2016) identified <10 mg/L as a no effect or sub-lethal minimal effect concentration.

The low sensitivity of the deep-water benthic communities/habitats within and in the vicinity of relief well locations, combined with the relatively low toxicity of water based muds (WBM and non-water based muds (NWBMs, no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota indicate that any localised impact would likely be of a slight magnitude (especially when considering the broader consequence of the loss of well containment (LOC) event a relief well drilling activity would be responding too).

Vessel operations and anchoring

Typical booms used in containment and recovery operations are designed to float, meaning that fauna capable of diving, such as cetaceans, marine turtles and sea snakes can readily avoid contact with the boom. Impacts to species that inhabit the water column such as sharks, rays and fish are not expected. Additionally, some fauna, such as cetaceans, are likely to detect and avoid the spill area, and are not expected to be present in the proximity of containment and recovery operations.

During the implementation of response techniques, where water depths allow, it is possible that response vessels will be required to anchor (e.g. during shoreline surveys). The use of vessel anchoring will be minimal and likely to occur when the impacted shoreline is inaccessible via road. Anchoring in the nearshore environment of sensitive receptor locations will have the potential to impact coral reef, seagrass beds and other benthic communities in these areas. Recovery of benthic communities from anchor damage depends on the size of anchor and frequency of anchoring. Impacts would be highly localised (restricted to the footprint of the vessel anchor and chain) and temporary, with full recovery expected.

Presence of personnel on the shoreline

Presence of personnel on the shoreline during shoreline operations could potentially result in disturbance to wildlife and habitats. During the implementation of response techniques, it is possible that personnel may have minimal, localised impacts on habitats, wildlife and coastlines. The impacts associated with human presence on shorelines during shoreline surveys may include:

- damage to vegetation/habitat to gain access to areas of shoreline oiling;
- damage or disturbance to wildlife during shoreline surveys;
- removal of surface layers of intertidal sediments (potential habitat depletion); and
- excessive removal of substrate causing erosion and instability of localised areas of the shoreline.

Human presence

Human presence for manual clean-up operations may lead to the compaction of sediments and damage to the existing environment especially in sensitive locations such as mangroves and turtle nesting beaches. However, any impacts are expected to be localised with full recovery expected.

Waste generation

Implementing the selected response techniques will result in the generation of the following waste streams that will require management and disposal:

- liquids (recovered oil/water mixture), recovered from containment and recovery and shoreline clean-up operations
- semi-solids/solids (oily solids), collected during containment and recovery and shoreline clean-up operations

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- debris (e.g. seaweed, sand, woods, plastics), collected during containment and recovery and shoreline clean-up operations and oiled wildlife response.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination similar to that described above, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

Cutting back vegetation could allow additional oil to penetrate the substrate and may also lead to localised habitat loss. However, any loss is expected to be localised in nature and lead to an overall net environmental benefit associated with the response by reducing exposure of wildlife to oiling.

Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- capturing wildlife
- transporting wildlife
- stabilisation of wildlife
- cleaning and rinsing of oiled wildlife
- rehabilitation (e.g. diet, cage size, housing density)
- release of treated wildlife

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife is not released back into a contaminated environment.

7.4 Treatment of impacts and risks from implementing response techniques

In respect of the impacts and risks assessed the following treatment measures have been adopted. It must be recognised that this environmental assessment is seeking to identify how to maintain the level of impact and risks at levels that are ALARP and of an acceptable level rather than exploring further impact and risk reduction. It is for this reason that the treatment measures identified in this assessment will be captured in Operational Plans, Tactical Response Plans, and/or First Strike Plans.

Vessel operations and access in the nearshore environment

- the boom will be monitored and maintained to ensure trapped fauna are released as early as possible, with Containment and Recovery activities occurring in daylight hours only (PS 13.1)
- if vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified (PS 13.2, 16.1, 19.1, 31.3).
- shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines (PS 13.3, 16.2, 19.2, 31.4)

Presence of personnel on the shoreline

- oversight by trained personnel who are aware of the risks (PS 19.5)
- trained unit leader's brief personnel of the risks prior to operations (PS 19.6)

Human Presence

- shoreline access route (foot, car, vessel and helicopter) with the least environmental impact identified will be selected by a specialist in SCAT operations (PS 31.5)
- vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves. (PS 19.3, 31.6)

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Waste generation

- zoning of response locations to prevent secondary contamination and minimize the mixing of clean and oiled sediment and shoreline substrates (PS 17.4)
- limiting vegetation removal to only that vegetation that has been moderately or heavily oiled (PS 19.4)
- teams will segregate liquid and solid wastes at the earliest opportunity (PS 25.1)

Additional stress or injury caused to wildlife

- operations conducted with advice from the DBCA Oiled Wildlife Advisor and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan (PS 23.1)

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8 ALARP CONCLUSION

An analysis of alternative, additional and improved control measures has been undertaken to determine their reasonableness and practicability. The tables in Section 6 document the considerations made in this evaluation. Where the costs of an alternative, additional, or improved control measure have been determined to be clearly disproportionate to the environmental benefit gained from its adoption it has been rejected. Where this is not considered to be the case the control measure has been adopted.

The risks from a hydrocarbon spill have been reduced to ALARP because:

- Woodside has a significant hydrocarbon spill response capability to respond to the WCCS through the control measures identified.
- new and modified impacts and risks associated with implementing response techniques have been considered and will not increase the risks associated with the activity.
- a consideration of alternative, additional, and improved control measures identified any other control measures that delivered proportionate environmental benefit compared to the cost of adoption for this activity ensuring that:
  - known, reasonably practicable control measures have been adopted.
  - no additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
  - no reasonably practical additional, alternative, and/or improved control measure exists.
- a structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- the evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- the likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

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9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts have been reduced to an acceptable level by meeting all of the following criteria:

- techniques are consistent with Woodside's processes and relevant internal requirements including policies, culture, processes, standards, structures and systems.
- levels of risk/ impact are deemed acceptable by relevant persons/ organisations are aligned with the uniqueness of, and/or the level of protection assigned to the environment, its sensitivity to pressures introduced by the activity, and the proximity of activities to sensitive receptors, and have been aligned with Part 3 of the EPBC Act.
- selected control measures meet requirements of legislation and conventions to which Australia is a signatory (e.g. MARPOL, the World Heritage Convention, the Ramsar Convention, and the Biodiversity Convention etc.). In addition to these, other non-legislative requirements met include:
  - Australian IUCN reserve management principles for Commonwealth marine protected areas and bioregional marine plans.
  - national Water Quality Management Strategy and supporting guidelines for marine water quality.
  - conditions of approval set under other legislation.
  - national and international requirements for managing pollution from ships.
  - national biosecurity requirements.
- industry standards, best practices and widely adopted standards and other published materials have been used and referenced when defining acceptable levels. Where these are inconsistent with mandatory/ legislative regulations, explanation has been provided for the proposed deviation. Any deviation produces the same or a better level of environmental performance (or outcome).

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11 GLOSSARY AND ABBREVIATIONS

Term	Description/ definition
~	Approximately
<, ≤	Less than, less than or equal to
>, ≥	Greater then, greater than or equal to
°C	Degrees Celsius
AEP	Australian Energy Producers (formerly Australian Petroleum Production and Exploration Association [APPEA]; from 13 September 2023)
ALARP	As low as reasonably practicable; Demonstration through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce risks further.
AMOP	Arctic and Marine Oil Spill Program
AMOSC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production & Exploration Association (now Australian Energy Producers (AEP); from 13 September 2023)
Availability	The availability of a control measure is the percentage of time that it is capable of performing its function (operating time plus standby time) divided by the total period (whether in service or not). In other words, it is the probability that the control has not failed or is undergoing a maintenance or repair function when it needs to be used.
BAOAC	Bonn Agreement Oil Appearance Code
BC Act	Western Australian *Biodiversity Conservation Act 2016*
BIA	Biologically Important Area
BIP	Bridging Implementation Plan
BP	Boiling point
CEM	Crisis and Emergency Management
CERCLA	United States Comprehensive Environmental Response, Compensation, and Liability Act
CIMT	Corporate Incident Management Team (Level 2 incidents)
CMT	Crisis Management Team (Level 3 incidents)
Control	The means by which risk from events is eliminated or minimised.
Control effectiveness	A measure of how well the control measures perform their required function.
Control measure (risk control measure)	The features that eliminate, prevent, reduce or mitigate the risk to environment associated with Petroleum Activity.
COP	Common Operating Picture
Credible spill scenario	A spill considered by Woodside as representative of maximum volume and characteristics of a spill that could occur as part of the Petroleum Activity.
CS	Credible scenario
cSt	Centistokes
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions
DTMI	Western Australia Department of Transport and Major Infrastructure
DWH	Deepwater Horizon
EMBA	Environment that May Be Affected. The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.

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Term	Description/ definition
EMSA	European Maritime Safety Agency
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
EP	Environment Plan
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESI	Environmental Sensitivity Index
FSP	First Strike Plan
ft	Feet (non-metric distance measurement)
GPGT	Geophysical and geotechnical
HSE	Health, safety and environment
HSP	Hydrocarbon Spill Preparedness
HVLP	High volume low pressure
IAP	Incident Action Plan
IC	Incident Commander
IMO	International Maritime Organization
IMS	Incident Management System
IMT	Incident Management Team (Level 1 incidents)
Incident	An event where a release of energy resulted in or had (with) the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
IPIECA	International Petroleum Industry Environment Conservation Association
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature
KBSF	King Bay Supply Facility
KEF	Key Ecological Feature
KGP	Karratha Gas Plant
km	Kilometre
m	Metre
MARPOL	The International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. Also known as MARPOL 73/78.
MDO	Marine Diesel Oil
MEPC	Marine Environment Protection Committee (part of the IMO)
MGO	Marine Gas Oil
mm	Millimetre
MSA	Master Services Agreement
MSP	Monitoring Service Provider
MSRC	Marine Spill Response Corporation
NEBA	Net Environmental Benefit Analysis
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority (Australia)
NR	Nature Reserve

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Term	Description/ definition
NRDA	Natural Resource Damage Assessment
OILMAP	Oil Spill Model and Response System
OM	Operational Monitoring
OMP	Operational Monitoring Plan
OPEP	Oil Pollution Emergency Plan
OSCA	Oil Spill Control Agent
OSM	Operational and Scientific Monitoring
OSPRMA	Oil Spill Preparedness and Response Mitigation Assessment
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
OWRP	Oiled Wildlife Response Plan
Performance outcome	A statement of the overall goal or outcome to be achieved by a control measure
Performance standard	The parameters against which [risk] controls are assessed to ensure they reduce risk to ALARP. A statement of the key requirements (indicators) that the control measure has to achieve in order to perform as intended in relation to its functionality, availability, reliability, survivability and dependencies.
PPA	Priority Protection Area
ppb	Parts per billion
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
PS	Performance Standard
Reasonably practicable	... a computation ... made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) [showing whether or not] that there is a gross disproportion between them ... made by the owner at a point of time anterior to the accident. (Judgement: Edwards v National Coal Board [1949])
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (World Heritage Area [WHA], Commonwealth or State marine reserve or park) containing one or more receptor type.
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill.
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Regulator	NOPSEMA are the Environment Regulator under the Environment Regulations.
Reliability	The probability that at any point in time a control measure will operate correctly for a further specified length of time.
Response technique	The key priorities and objectives to be achieved by the response plan Measures taken in response to an event to reduce or prevent adverse consequences.
RPA	Response Protection Area
S&EM	Security and Emergency Management
SCAT	Shoreline Clean-up Assessment Techniques
SCU	Shoreline clean-up

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Term	Description/ definition
SHP-MEE	State Hazard Plan – Maritime Environmental Emergencies
SIMA	Spill Impact Mitigation and Assessment
SIMAP	Integrated Oil Spill Impact Model System
SIMOPS	Simultaneous operations
SMP	Scientific Monitoring Plan
SOPEP	Shipboard Oil Pollution Emergency Plan
Survivability	Whether or not a control measure is able to survive a potentially damaging event is relevant for all control measures that are required to function after an incident has occurred.
Threshold	Hydrocarbon threshold concentrations applied to the risk assessment to evaluate hydrocarbon spills. These are defined as: surface hydrocarbon concentration – ≥10 g/m^2, dissolved – ≥10 ppb and entrained hydrocarbon concentrations – ≥1,000 ppb.
ToA	Testing of Arrangements
TRP	Tactical Response Plan
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
UK	United Kingdom
VOC	Volatile Organic Compound
WA	Western Australia
WAOWRP	WA Oiled Wildlife Response Plan
WCCS	Worst Case Credible Scenario
WHA	World Heritage Area
Woodside	Woodside Energy Limited

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ANNEX A: NET ENVIRONMENTAL BENEFIT ANALYSIS DETAILED OUTCOMES

A NEBA has been conducted to assess the net environmental benefit of different response techniques to selected receptors in the event of an oil spill from the Petroleum Activity for Well LOC (subsea) of Yodel-3 condensate and Well LOC (surface) of GWA03 condensate. The complete list of potential receptor locations within the EMBA within the Petroleum Activity is included in Section 6.8 of the EP.

The locations utilised for the NEBA were limited to the identified RPAs of the Petroleum Activity identified from modelling (see Section 3 for outline of selection). These include receptors which have potential for the following:

- surface contact (>50 g/m^2)
- surface contact (>10 g/m^2 for oiled wildlife response)
- shoreline accumulation (>100 g/m^2) at any time

The detailed NEBA assessment outcomes are shown below. The GWA Facility Operations preoperational NEBAs contains the full assessments.

Table A-1: NEBA assessment technique recommendations for Well LOC (subsea) of Yodel 3 condensate (MEE-01 Scenario-01)

Receptor	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Montebello MP	Yes	No	No	No	Not applicable	Not applicable	Not applicable	Not applicable	Yes	No	No	Yes
Rankin Bank	Yes	Potentially	No	No	Not applicable	Not applicable	Not applicable	Not applicable	Yes	No	No	Yes
No Name Shoal	Yes	No	No	No	Not applicable	Not applicable	Not applicable	Not applicable	Yes	No	No	Yes
Wilcox Shoal	Yes	No	No	No	Not applicable	Not applicable	Not applicable	Not applicable	Yes	No	No	Yes

Overall assessment

Sensitive receptor (sites identified in EP)	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Is this response Practicable?	Yes	Potentially	No	No	No	No	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	Potentially	No	No	No	No	No	No	Yes	No	No	Yes

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Table A-2: NEBA assessment technique recommendations for Well LOC (surface) of GWA-03 condensate (MEE-01 Scenario-02)

Receptor	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Muiron Islands & MMA	Yes	No	Not applicable	No	Yes	Yes	No	No	Yes	No	No	Yes

Overall assessment

Sensitive receptor (sites identified in EP)	Monitor and evaluate	Containment and recovery	Dispersant application: sub-sea	Dispersant application: >20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled wildlife response	In situ burning	Mechanical dispersion	Well control and intervention
Is this response Practicable?	Yes	No	Not applicable	No	Yes	Yes	No	No	Yes	No	No	Yes
NEBA identifies response potentially of net environmental benefit?	Yes	No	Not applicable	No	Yes	Yes	No	No	Yes	No	No	Yes

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NEBA impact ranking classification guidance

To reduce variability between assessments, the following ranking descriptions have been devised to guide the workshop process:

			Degree of impact[8]	Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	3P	Major	Likely to prevent: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-today business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches) or regulatory designations.	Decrease in duration of impact by > 5 years	N/A
	2P	Moderate	Likely to prevent: • significant impact to a single phase of reproductive cycle of biological receptors • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors.	Decrease in duration of impact by 1–5 years	N/A
	1P	Minor	Likely to prevent impacts on: • significant proportion of population or breeding stages of biological receptors • socio-economic receptors such as: – significant impact to the sensitivity of protective designation; or – significant and long-term impact to business/industry.	Decrease in duration of impact by several seasons (< 1 year)	N/A
	0	Non-mitigated spill impact	**No detectable difference to unmitigated spill scenario.**		
Negative	1N	Minor	Likely to result in: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches), or regulatory designations.	Increase in duration of impact by several seasons (< 1 year)	Increase in risk by one sub-category, without changing category (e.g. Minor (E) to Minor (D))
	2N	Moderate	Likely to result in: • significant impact to a single phase of reproductive cycle for biological receptors; or • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. This level of negative impact is recoverable and unlikely to result in closure of business/industry in the region.	Increase in duration of impact by 1–5 years	Increase in risk by one category (e.g. Minor (D) to Moderate (C or B))
	3N	Major	Likely to result in impacts on: • significant proportion of population or breeding stages of biological receptors • socio-economic receptors resulting in either: – significant impact to the sensitivity of protective designation; or – significant and long-term impact to business/industry.	Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

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8 NOTE: the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3

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ANNEX B: MONITOR AND EVALUATE ACTIVATION AND TERMINATION CRITERIA

Table B-1: Monitor and evaluate objectives, triggers and termination criteria

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Predictive Modelling of Hydrocarbons to Assess Resources at Risk	Predictive modelling focuses on the conditions that have prevailed since a spill commenced, as well as those that are forecasted in the short term (1–3 days ahead) and longer term. Predictive modelling utilises computer-based forecasting methods to predict hydrocarbon spill movement and guide the management and execution of spill response operations to maximise the protection of environmental resources at risk. The objectives of predictive modelling are to: • Provide forecasting of the movement and weathering of spilled hydrocarbons • Identify resources that are potentially at risk of contamination • Provide simulations showing the outcome of alternative response options (booming patterns etc.) to inform on-going Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP	Predictive modelling will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of predictive modelling are: • The hydrocarbon discharge has ceased and no further surface oil is visible • Response activities have ceased • Hydrocarbon spill modelling (as verified by surveillance observations) predicts no additional natural resources will be impacted

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Surveillance and reconnaissance to detect hydrocarbons and resources at risk	Surveillance and reconnaissance aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill. The objectives of surveillance and reconnaissance are: • Verify spill modelling results and recalibrate spill trajectory models. • Understand the behaviour, weathering and fate of surface hydrocarbons. • Identify environmental receptors and locations at risk or contaminated by hydrocarbons. • Inform ongoing Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP. • To aid in the subsequent assessment of the short- to long-term impacts and/or recovery of natural resources (assessed in SMPs) by ensuring that the visible cause and effect relationships between the hydrocarbon spill and its impacts to natural resources have been observed and recorded during the operational phase.	Surveillance and reconnaissance will be triggered immediately following a level 2/3 hydrocarbon spill.	The termination triggers for the Surveillance and reconnaissance are: • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons. • Latest hydrocarbon spill modelling results do not predict surface exposures at visible levels.

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Pre-emptive assessment of sensitive receptors at risk	Pre-emptive shorelines assessment aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk. The primary objective of pre-emptive shorelines assessment is to confirm understanding of the status and characteristics of environmental resources, predicted by predictive modelling and surveillance, to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources. Indirectly, qualitative/semi-quantitative pre-contact information collected by pre-emptive shorelines assessment on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs. Pre-emptive shorelines assessment would be undertaken in liaison with WA DTMI as the control agency once the oil is in State Waters (if a Level 2/3 incident).	Triggers for commencing pre-emptive shorelines assessment include: • Contact of a sensitive habitat or shoreline is predicted by predictive modelling and surveillance. • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed via SCAT.	The criteria for the termination of pre-emptive shorelines assessment at any given location are: • Locations predicted to be contacted by hydrocarbons have been contacted. • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate).

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ANNEX C: PETROLEUM ACTIVITY OSM ACTIVITY SPECIFIC REQUIREMENT AND VERIFICATION OF OSM-BIP ADEQUACY

The Woodside OSM-BIP[2] comprehensively presents important information for OSM assessment and implementation, including the process for assessing OSM requirements for each activity. This Annex provides the activity-specific information required for the GWA Facility Operations (hereafter referred to as the Petroleum Activity) OSM Assessment, including:

- OSM Planning Area;
- monitoring priorities;
- mobilisation and implementation timeframes; and
- resourcing requirements and capability assessment.

C.1 Determine if the activity OSM Planning Area fits within the Combined OSM Planning Area

The OSM Planning Area for the Petroleum Activity credible spill scenarios (as shown in Figure C - 1) fits within the Combined OSM Planning Area (Figure 2-1 in the OSM-BIP).

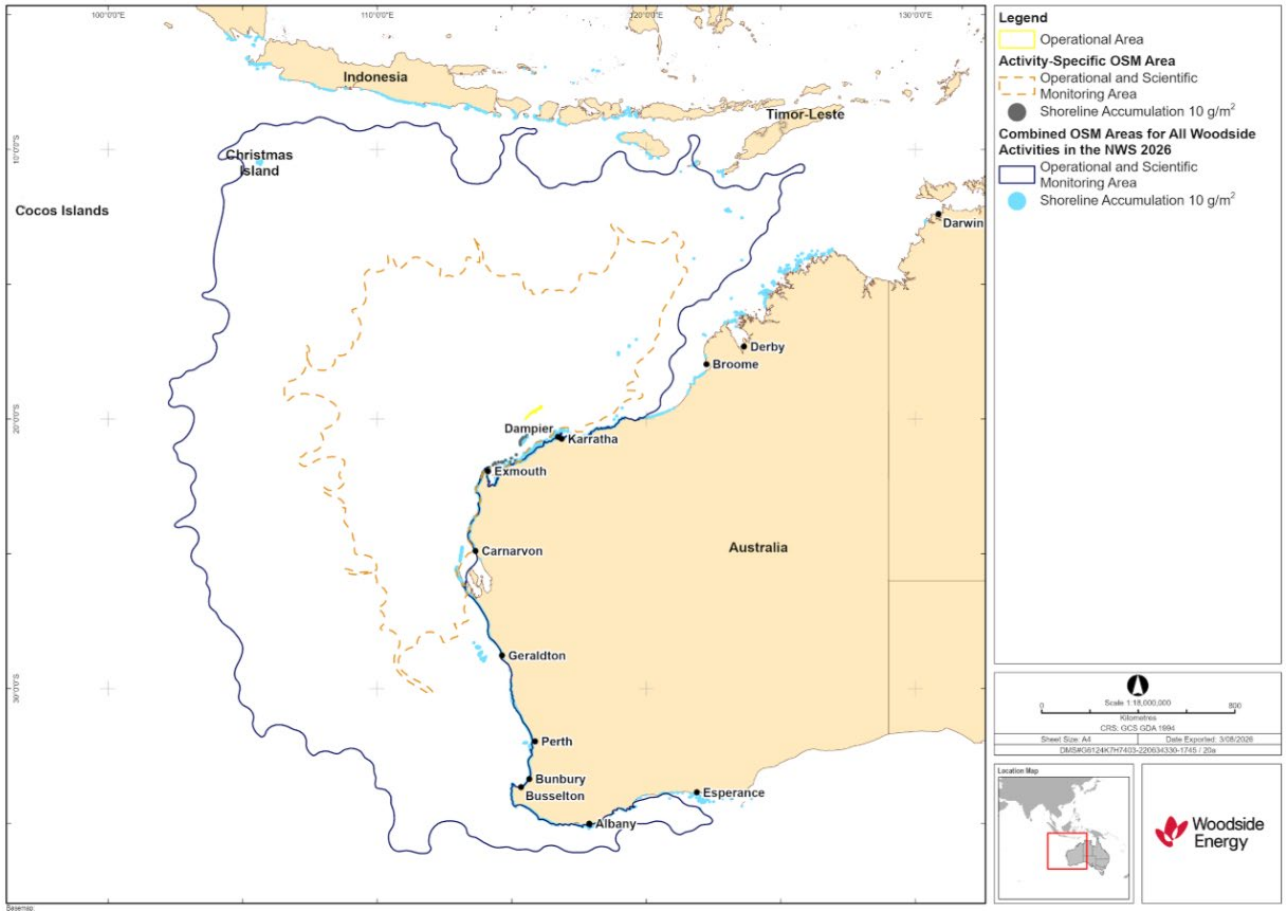


Figure C - 1: Petroleum Activity OSM Planning Area based on the area potentially contacted by the low (below ecological impact) hydrocarbon thresholds in the event of the worst-case credible spill scenarios (MEE-01 Scenario-01, MEE-01 Scenario-02, MEE-02 Scenario-03, MEE-02 Scenario-04, MEE-02 Scenario-05 and MEE-05 Scenario-08)

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C.2 Determine activity-specific monitoring priorities

Assess spill exposure risk using trajectory modelling

Woodside has reviewed the stochastic oil spill modelling results for the worst-case credible spill scenarios listed in Table 2-1 and as outlined in Section 2.2 of the OSM-BIP, identified receptors contacted at a higher probability of rapid contact. Table C - 1 presents the receptors contacted within 14 days at a probability >10% at the low threshold for dissolved (≥10 ppb), entrained (≥10 ppb), floating (≥1 g/m^2), and shoreline contact (≥10 g/m^2).

Evaluate availability of adequate baseline data

The availability of baseline data may influence monitoring priorities. Section 4 of the OSM-BIP outlines Woodside's baseline review and evaluation process. Using the Marine Environment Baseline Database, Woodside has reviewed baseline data for all of the receptors predicted of being rapidly contacted at a higher probability from Petroleum Activity activities (Table C - 1) to help determine which receptors and key features have insufficient or no baseline data available and should be given a higher monitoring priority.

It is anticipated that some receptors and locations may be impacted before monitoring teams can begin the assessments. Given this constraint, and the limited baseline data at many priority monitoring locations and receptors, scientific monitoring will likely need to use a combination of approaches including gradient analysis, impact versus control comparisons, and lines of evidence methodologies. During a spill, it may be necessary to identify additional unaffected control sites for comparative monitoring where possible. As such, control sites have been factored into capability planning in Section C.4.

Consideration of Key Ecological Features, Biologically Important Areas and transient receptors

A number of broadscale ecological features are located within the OSM Planning Area and have been considered in monitoring prioritisation and OSM capability planning for the Petroleum Activity activities. The following Key Ecological Features (KEFs) (and their distances to the Operational Area) are noted in Table 4-15 of the EP:

- Ancient Coastline at 125 m Depth Contour (overlaps Operational Area)
- Continental Slope Demersal Fish Communities (25 km west-southwest from Operational Area)
- Glomar Shoal (45.2 km east from the Operational Area)
- Exmouth Plateau (122 km west from the Operational Area)
- Canyons Linking the Cuvier Abyssal Plain and the Cape Range Peninsula (181 km southwest from the Operational Area)
- Commonwealth Waters Adjacent to Ningaloo Reef (226 km southwest from the Operational Area)
- Western Demersal Slope and associated Fish Communities of the Central Western Province (693 km southwest from Operational Area)

The Ancient Coastline at 125 m Depth Contour KEF overlaps the Petroleum Activity Operational Area, so is at a higher risk of contact with hydrocarbons. All KEFs within the OSM Planning Area are described in detail in Section 4.7 and Appendix C of the EP. These KEFs include subsea receptors therefore, OSM planning and resourcing for this activity includes relevant monitoring requirements, such as water quality, sediment quality, benthic habitats and fish for these features (refer to Table C - 3 and Table C - 9).

The OSM Area also overlaps a number of Biologically Important Areas (BIAs) with protected species potentially occurring in the area, as described in Section 4.6 of the EP and listed in Table C - 3. A number of the BIAs and protected species are located within the geographical extents of other receptors, such as marine turtles within the Montebello Marine Park, so these BIAs and protected species would automatically be included in the relevant SMPs for that receptor (refer to Table C - 6). Where BIAs, protected species and KEFs are situated away from the monitoring priorities, they will be captured in the Offshore Environs monitoring unit described in Table C - 6.

Initial monitoring priorities

Monitoring prioritisation during the initial stages of a spill should focus on sensitive receptors with the highest risk of adverse consequences and where oil spill modelling predicts high probability of rapid contact. During the initial monitoring response, emphasis will be placed on receptors contacted by floating, shoreline, and

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dissolved hydrocarbon phases. If a receptor is only contacted by low concentrations of entrained hydrocarbons and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response.

To further guide monitoring prioritisation in the event of a spill, Woodside has also compared the availability of baseline data against the WA State-based protection prioritisation evaluation rankings. The WA DTMI protection priority rankings were established through the Western Australian Marine Oil Pollution Risk Assessment process. These rankings evaluate each receptor's vulnerability to marine oil spills, considering impacts from both floating and dissolved oil, as shown in Table C - 4. This information is then used to determine the resultant initial monitoring priorities for the activity.

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Table C - 1: Petroleum Activity credible spill scenarios stochastic modelling results for receptors with a probability of contact ≥10% and <14 days

Receptor	Total contact probability (%) floating oil ≥1 g/m²	Min. arrival time floating oil ≥1 g/m² (hours)	Total contact probability (%) shoreline accumulation ≥10 g/m²	Min. arrival time shoreline accumulation ≥10 g/m² (hours)	Probability (%) entrained oil at ≥10 ppb	Min. arrival time entrained oil ≥10 ppb (hours)	Probability (%) dissolved oil at >10 ppb	Min. arrival time dissolved oil ≥10 ppb (hours)
Yodel-3 subsea Well Loss of Containment (MEE-01 Scenario 01)								
Airlie Island	NA	NC	NA	NC	17	185	3	722
Argo-Rowley Terrace MP	NA	NC	NA	NA	23	326	5	674
Barrow Island	NA	NC	NA	NC	43	157	26	278
Barrow Island MMA	NA	NC	NA	NA	52	129	30	212
Barrow Island MP (State)	NA	NC	NA	NA	38	211	18	343
Bessieres Island	NA	NC	NA	NC	53	191	32	196
Boodie Island	NA	NC	NA	NC	16	265	3	834
Boodie, Double Middle Islands Nature Reserve NR	NA	NC	NA	NC	17	264	4	809
Brewis Reef	NA	NC	NA	NA	32	210	9	342
Combe Reef	NA	NC	NA	NA	31	244	1	453
Dailey Shoal	NA	NC	NA	NA	39	209	19	385
Exmouth	NA	NC	1	1,823	35	391	19	365
Exmouth Reef	NA	NC	NA	NA	23	306	1	886
Fairway Reef	NA	NC	NA	NA	31	208	8	439
Flat Island	NA	NC	1	1,947	54	197	37	202
Fly Island	NA	NC	NA	NC	23	231	2	1,079
Gascoyne MP	NA	NC	NA	NA	85	199	48	276
Hermite Island	NA	NC	NA	NC	24	122	6	650
Hood Reef	NA	NC	NA	NA	38	205	18	241
Middle Island	NA	NC	NA	NC	14	265	4	831
Montebello Islands	NA	NC	NA	NC	33	119	9	509
Montebello Islands MP	NA	NC	NA	NC	47	106	22	188
Montebello MP	14	66	NA	NA	100	39	100	50
Montebello Shoals	NA	NC	NA	NA	29	121	6	611
Muiron Islands	NA	NC	5	752	53	216	40	268
Muiron Islands MMA	NA	NC	5	752	54	212	48	216
Ningaloo Coast WH	NA	NC	1	1,823	68	199	46	270
Ningaloo MP (State)	NA	NC	1	1,823	55	230	37	349
Ningaloo MP	NA	NC	NA	NA	68	199	46	270
Ningaloo Reef	NA	NC	NA	NA	40	382	28	363
No Name Shoal	21	126	NA	NA	100	25	100	42
Observation Island	NA	NC	NA	NC	32	218	6	431
Otway Reef	NA	NC	NA	NA	37	219	7	432
Outtrim Patches	NA	NC	NA	NA	52	214	37	273
Peak Island	NA	NC	NA	NC	53	201	43	208
Penguin Bank	NA	NC	NA	NA	55	170	34	174
Poivre Reef	NA	NC	NA	NA	29	182	8	641

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Receptor	Total contact probability (%) floating oil ≥1 g/m²	Min. arrival time floating oil ≥1 g/m² (hours)	Total contact probability (%) shoreline accumulation ≥10 g/m²	Min. arrival time shoreline accumulation ≥10 g/m² (hours)	Probability (%) entrained oil at ≥10 ppb	Min. arrival time entrained oil ≥10 ppb (hours)	Probability (%) dissolved oil at >10 ppb	Min. arrival time dissolved oil ≥10 ppb (hours)
Rankin Bank	99	6	NA	NA	100	6	100	7
Rosily Shoals	NA	NC	NA	NA	54	180	31	186
Round Island	NA	NC	NA	NC	39	203	16	254
Santo Rock	NA	NC	NA	NA	15	304	NA	NC
Serrurier Island	NA	NC	1	893	53	195	27	219
Southern Pilbara - Islands	NA	NC	1	893	57	172	43	171
Spider Reef	NA	NC	NA	NA	23	230	4	1,063
Sultan Reef	NA	NC	NA	NA	15	209	3	1,813
Sunday Island	NA	NC	NA	NC	42	218	29	219
Table Island	NA	NC	NA	NC	43	205	13	410
Taunton Reef	NA	NC	NA	NA	11	327	3	1,778
Thevenard Island	NA	NC	NA	NC	28	207	5	378
Thevenard Island NR	NA	NC	NA	NC	30	207	5	376
Tortoise Island	NA	NC	NA	NC	25	248	3	304
Trap Reef	NA	NC	NA	NA	41	195	9	330
Tryal Rocks	NA	NC	NA	NA	58	101	47	151
Web Reef	NA	NC	NA	NA	22	230	2	1,136
Wilcox Shoal	22	62	NA	NA	99	19	97	20
GWA condensate surface Well Loss of Containment (MEE-01 Scenario-02)								
Barrow Island	NC	NA	NC	NA	85	247	18	419
Barrow Island MMA	NC	NA	NC	NA	88	136	22	166
Barrow Island MP	NC	NA	NC	NA	82	264	11	471
Boodie Island	NC	NA	3	952	38	308	3	1,041
Glomar Shoal	NC	NA	NC	NA	1	262	8	241
Montebello Islands	NC	NA	8	835	42	222	5	355
Montebello Islands MP	NC	NA	8	835	72	196	12	286
Montebello MP	NC	NA	NC	NA	100	45	100	47
Montebello Shoals	NC	NA	NC	NA	42	232	2	322
Penguin Bank	NC	NA	NC	NA	80	187	10	195
Poivre Reef	NC	NA	NC	NA	49	222	5	718
Rankin Bank	8	51	NC	NA	100	40	100	42
Ripple Shoal	NC	NA	NC	NA	15	317	<1	NC
Rosily Shoals	NC	NA	NC	NA	58	242	1	1,753
Southern Pilbara - Islands	NC	NA	17	714	79	142	11	207
Tryal Rocks	NC	NA	NC	NA	91	171	30	253
Subsea loss of containment of Wilcox Flowline of 799.7 m³ (MEE-02 Scenario-03)								
Bessieres Island	NA	NA	NA	NA	11	180	NA	NA
Dailey Shoal	NA	NA	NA	NA	12.5	144	NA	NA
Flat Island	NA	NA	NA	NA	15.5	137	NA	NA

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Receptor	Total contact probability (%) floating oil ≥1 g/m²	Min. arrival time floating oil ≥1 g/m² (hours)	Total contact probability (%) shoreline accumulation ≥10 g/m²	Min. arrival time shoreline accumulation ≥10 g/m² (hours)	Probability (%) entrained oil at ≥10 ppb	Min. arrival time entrained oil ≥10 ppb (hours)	Probability (%) dissolved oil at >10 ppb	Min. arrival time dissolved oil ≥10 ppb (hours)
Gascoyne MP	NA	NA	NA	NA	13	172	NA	NA
Montebello MP	NA	NA	NA	NA	61.5	16	34.5	17
Muiron Island MMA	NA	NA	NA	NA	18.5	155	NA	NA
Muiron Islands	NA	NA	NA	NA	18.5	158	NA	NA
Ningaloo Coast WH	NA	NA	NA	NA	18	181	NA	NA
Ningaloo MP	NA	NA	NA	NA	18	181	NA	NA
Ningaloo MP (State)	NA	NA	NA	NA	14	181	NA	NA
Otway Reef	NA	NA	NA	NA	11	208	NA	NA
Outtrim Patches	NA	NA	NA	NA	18	156	NA	NA
Peak Island	NA	NA	NA	NA	17	139	NA	NA
Rankin Bank	12.5	2	NC	NC	43	2	25	2
Serrurier Island	NA	NA	NA	NA	13	190	NA	NA
Southern Pilbara - Islands	NA	NA	NA	NA	17	118	NA	NA
Sunday Island	NA	NA	NA	NA	11.5	168	NA	NA
Subsea loss of containment of subsurface trunkline LOC of 8,090 m³ (MEE-02 Scenario-04)								
Gascoyne MP	NA	NA	NA	NA	11	288	13	305
Montebello MP	NA	NA	NA	NA	50	33	45	41
Ningaloo Coast WH	NA	NA	NA	NA	13.5	287	NA	NA
Ningaloo MP	NA	NA	NA	NA	12	287	NA	NA
Ningaloo MP (State)	NA	NA	NA	NA	13.5	301	NA	NA
Rankin Bank	NA	NA	NA	NA	63	25	50.5	29
Tyral Rocks	NA	NA	NA	NA	10	58	NA	NA
Subsea Loss of Containment of subsurface trunkline LOC of 7,823 m³ (MEE-02 Scenario-05)								
Gascoyne MP	NA	NA	NA	NA	10.5	252	NA	NA
Montebello MP	NA	NA	NA	NA	32.5	35	13.5	37
Rankin Bank	NA	NA	NA	NA	38	21	25	22
Tyral Rocks	NA	NA	NA	NA	10.5	60	NA	NA
Instantaneous Surface Release of 1,000 m³ of MDO (MEE-05 Scenario-08)								
Gascoyne MP	NC	NC	NC	NC	14	243	1	Data not available
Montebello MP	1	86	NC	NC	34	34	9	Data not available
Rankin Bank	1	28	NC	NC	20	18	3	Data not available

Key
Receptor contacted within 7 days
Receptor contacted within 7–14 days
Receptor only contacted by entrained hydrocarbons at a probability >10% and a concentration ≥10 ppb

**Submerged receptor that has no features above the sea surface. Modelling indicates 'contact' with these receptors when the hydrocarbons pass over the receptor on the sea surface;*
NA = not applicable;
NC = no contact

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Table C - 2: Baseline data assessment versus SMPs for receptors predicted at being contacted >10% probability and <14 days

Receptor	SM1: Water quality impact	SM2: Sediment quality impact	SM3: Intertidal and coastal habitat	SM4: Seabirds and shorebirds	SM5: Marine megafauna – reptiles	SM5: Marine megafauna – whale sharks, dugong and cetacean	SM6: Benthic habitat	SM7: Marine fish and elasmobranch assemblages	SM8: Fisheries impact	SM9 & 10: Heritage and social impact
Ningaloo (including Ningaloo WHA, Ningaloo Coast North)					Turtles	Whale shark			(Locations to be determined in consultation with key stakeholders to reflect current fishing zones/effort)	(Locations to be determined in consultation with key stakeholders)
					Sea snakes					
Muiron Islands					Turtles					
					Sea snakes					
Exmouth Gulf										
Southern Pilbara Islands & Shoreline	Ashburton Port	Ashburton Port		Urala Station, Onslow, Airlie, Serrurier & Thevenard Isl.	Turtles: Onslow, Thevenard & Airlie Islands			Green sawfish		
					Turtles elsewhere					
					Sea snakes					
Barrow Island	Barrow Isl Port	Barrow Isl Port		Double Island	Flatback turtle					
					Green & hawksbill turtles					
					Sea snakes					
Montebello Islands				Wedge-tailed shearwater at Ah Chong Is						
Argo-Rowley Terrace AMP			NA							
Gascoyne AMP			NA							
Montebello AMP			NA							
Ningaloo AMP			NA							
Rankin Bank & Glomar Shoals			NA	NA						
Reefs, shoals and banks			NA							

Key	
	No baseline data available, or existing data are inadequate in quality, scope, or relevance. Caveat: Additional relevant data may exist but be unknown and therefore not included in the assessment.
	Comprehensive baseline data or ongoing monitoring collected within the last 5 years. Data align with Joint Industry SMP parameters and methods, cover required species/communities and span the necessary spatial extent.
	Historical data (>5 years old) that remain of value, or some current but not extensive baseline data. Caveat: Additional relevant data may exist but be unknown and therefore not included in the assessment.
NA	N/A: not applicable as the receptor is submerged

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Table C - 3: Receptors contacted within 14 days at a probability >10% versus relevant OMPs and SMPs

Receptor	OM1: Hydrocarbon Characterisation	OM2: Hydrocarbon in Water	OM3: Hydrocarbon in Sediment	OM6: Shoreline Clean-up Assessment	OM5: Rapid Marine Fauna Surveillance	SM1: Water quality impact assessment	SM2: Sediment quality impact assessment	SM3: Intertidal and coastal habitat assessment	SM4: Seabirds and shorebirds	SM5: Marine megafauna assessment- reptiles	SM5: Marine megafauna assessment- whale sharks, dugong and cetacean	SM6: Benthic habitat assessment	SM7: Marine fish and elasmobranch assemblages assessment	SM8: Fisheries impact assessment	SM9 & 10: Heritage and social impact assessment
AMPs															
Argo-Rowley Terrace AMP*	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	✓
Gascoyne AMP*	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	✓
Montebello AMP*	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	✓
Ningaloo AMP*	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	✓
Coastlines															
Exmouth	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Southern Pilbara – Islands and Shoreline	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Islands															
Barrow Island (including Boodie and Middle Islands)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Montebello Islands	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Muiron Islands	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Southern Pilbara – Islands	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marine Parks (MP)															
Barrow Islands MMA and Barrow Island MP (State)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Montebello Islands MP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Muiron Islands MMA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ningaloo MP (State)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nature Reserves															
Boodie, Double Middle Islands Nature Reserve NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Thevenard Island NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reefs, Shoals and Banks	✓	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	✓	^
KEFs within 100 km of Operational Area															
Continental Slope Demersal Fish Communities	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	-	-
Ancient Coastline at 125 m depth contour	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	-	-	-
Glomar Shoals	-	✓	✓	-	✓	✓	✓	-	^	^	^	✓	✓	-	-
BIAs within 100 km of Operational Area															
Whale shark BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	✓
Pygmy blue whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Humpback whale BIA	-	✓	-	-	✓	✓	-	-	-	-	✓	-	-	-	-
Flatback turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Green turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Hawksbill turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-

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Receptor	OM1: Hydrocarbon Characterisation	OM2: Hydrocarbon in Water	OM3: Hydrocarbon in Sediment	OM6: Shoreline Clean-up Assessment	OM5: Rapid Marine Fauna Surveillance	SM1: Water quality impact assessment	SM2: Sediment quality impact assessment	SM3: Intertidal and coastal habitat assessment	SM4: Seabirds and shorebirds	SM5: Marine megafauna assessment- reptiles	SM5: Marine megafauna assessment- whale sharks, dugong and cetacean	SM6: Benthic habitat assessment	SM7: Marine fish and elasmobranch assemblages assessment	SM8: Fisheries impact assessment	SM9 & 10: Heritage and social impact assessment
Loggerhead turtle BIAs	-	✓	-	✓	✓	✓	✓	-	-	✓	-	✓	-	-	-
Fairy tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Lesser crested tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Roseate tern BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-
Wedge-tailed shearwater BIA	-	✓	-	✓	✓	✓	✓	-	✓	-	-	-	-	-	-

Key	
✓	It is highly likely that the initiation criteria would be met for the relevant OMP/SMP
^	It is possible that the initiation criteria may or may not be met for the relevant OMP/SMP
-	Not applicable

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Table C - 4: Initial monitoring priorities

Receptor	Key sensitivities / values	Relevant key periods	Baseline Priority	DTMI Ranking (Floating oil)	DTMI Ranking (Dissolved oil)	Initial Monitoring Priority
Southern Pilbara – Islands and Shoreline	Mangroves	N/A	Low	3	3	Low
	Turtles Critical nesting habitat for green turtle (*Chelonia mydas*) (endangered), flatback turtle (*Natator depressus*) (data deficient), hawksbill turtle (*Eretmochelys imbricata*) (critically endangered) and loggerhead (*Caretta caretta*) (vulnerable).	Oct to Apr	Low	4	3	Medium
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area. Australian humpback dolphin (*Sousa sahulensis*) (vulnerable), Indo-Pacific bottlenose dolphin (unknown) and dugong (*Dugong dugon*) (vulnerable) utilise the shallow intertidal waters around islands.	Humpback whale migration: Jun to Oct	High	3	2	Medium
	Birds Staging point/feeding area for migratory shore birds. Seabird nesting, resting and foraging on and around islands.	Migratory shorebirds: Aug to Apr Seabirds: Species dependant	Low	3	2	Low
	Fish Green sawfish (*Pristis zijsron*) (critically endangered).	Unknown	Low	4	5	High
	Coral and other subsea benthic habitats	Coral spawning: Mar & Oct	High	3	4	High
	Socio-economic Recreational fishing/ charter boats, tourism related to water-based activities and nature. Camping beaches.	Year-round	High	4	4	High
Montebello Islands	Mangroves Montebello Islands' mangrove communities are regarded as globally unique.	N/A	High	3	3	Medium
	Turtles Nesting area for green (*Chelonia mydas*) (endangered), flatback (*Natator depressus*) (data deficient), and hawksbill (*Eretmochelys imbricata*) (critically endangered) turtles. The islands are recognised as critical habitat for flatback turtles and for hawksbill turtles, with key sites for the latter including Ah Chong Island, South East Island, and Trimouille Island.	Turtle nesting Nov to Mar	High	4	3	High
	Marine mammals Pygmy blue whale (vulnerable) and humpback whale (*Megaptera novaeangliae*) (least concern) migration area. Resident populations of Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) (unknown and Australian humpback dolphins (*Sousa sahulensis*) (vulnerable). Dugong (*Dugong dugon*) (vulnerable) foraging.	Pygmy blue whale migration: Apr to Aug Humpback whale migration: Jun to Oct	High	3	2	Medium
	Birds Significant seabird nesting and foraging areas. Staging point/feeding area for migratory shore birds.	Seabird: Species dependant Migratory shorebirds: Aug to Apr	High, with the exception of wedge-tailed shearwater on Ah Chong Island (low)	3	2	Medium
	Coral and other subsea benthic primary producers	Coral spawning: Mar & Oct	High	3	4	High
	Socio-economic Pearling (inactive/pearling zones). Very significant for recreational fishing and charter boat tourism (Marine Management Area). Social amenities and other tourism. Nominated place (National Heritage).	Year-round	High	3	2	Medium
Barrow Island	Mangroves	N/A	High	3	3	Medium
	Turtles Regionally and nationally significant green turtle (*Chelonia mydas*) (endangered) (western side) and flatback turtle (*Natator depressus*) (data deficient) (eastern side) nesting. Small numbers of hawksbill turtle (*Eretmochelys imbricata*) (critically endangered) nesting.	Year round, peaking Oct to Jan	High, with the exception of nesting flatback turtles (low)	4	3	High

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Receptor	Key sensitivities / values	Relevant key periods	Baseline Priority	DTMI Ranking (Floating oil)	DTMI Ranking (Dissolved oil)	Initial Monitoring Priority
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area. Resident populations of bottlenose dolphins and Australian humpback dolphin (*Sousa sahulensis*) (vulnerable). Dugong (*Dugong dugon*) (vulnerable) foraging.	Humpback whale migration: Jun to Oct	High	3	2	Medium
	Birds Nationally significant site for migratory shorebirds, serving both as a key staging area during migration and as a non-breeding destination. Double Island has important bird nesting sites (shearwaters and sea eagles).	Migratory shorebirds: Aug to Apr	Low	2	1	Low
	Coral and other subsea benthic primary producers	Coral spawning: Mar & Oct	High	3	4	High
	Socio-economic Significant for recreational fishing and charter boat tourism, Nominated place (National heritage), Industry – Reverse Osmosis Plant and port operations. Petroleum Activities such as Barrow Island petroleum production.	Year-round	High	5	5	High
Muiron Islands	Turtles Turtle nesting – major loggerhead (*Caretta caretta*) (vulnerable) site, significant green turtle (*Chelonia mydas*) (endangered) nesting site, low density hawksbill turtle (*Eretmochelys imbricata*) (critically endangered) nesting, occasional flatback (*Natator depressus*) (data deficient) presence	Loggerhead peak nesting: Nov to Jan Green peak nesting Dec to Jan	High	4	3	High
	Coral and other subsea benthic primary producers	Coral spawning: Mar & Oct	Low	3	4	Medium
	Birds Seabird nesting and foraging. Internationally important shorebird area	Seabird nesting: approximately Sep–Feb Migratory shorebirds: Aug to Apr	High	2	1	Low
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area.	Humpback whale migration: Jun to Oct	High	3	2	Medium
	Fish Shallow macroalgal habitats identified as important juvenile habitat for blue-spotted emperor (*Lethrinus punctulatus*) (least concern).	Year-round	Low	1	1	Low
	Socio-economic and heritage Exmouth gulf prawn fishery (Muiron is western boundary); significant for recreational fishing and charter boat tourism	Prawn fishery – April to November	High	1	2	Low
Montebello AMP	Coral and other subsea benthic primary producers A prominent seafloor feature in the Marine Park is Tryal Rocks consisting of two close coral reefs. The reefs are emergent at low tide.	Coral spawning: Mar & Oct	High	3	4	High
	Turtles Biologically important internesting, foraging, mating, and nesting habitat for turtles.	Nesting green and flatback turtles: Oct to Mar (hawksbill can nest all year)	High	3	3	Medium
	Birds Biologically important breeding habitat for seabirds.	Species dependant	High	3	2	Medium
	Whale shark Biologically important habitat for whale shark (*Rhincodon typus*) (endangered)		High	3	4	High
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area.	Jun to Oct	High	3	2	Medium
	Socio-economic Pearling (inactive/pearling zones). Very significant for recreational fishing and charter boat tourism (Marine Management Area). Shipwreck (Tryal).	Year-round	High	3	2	Medium
Gascoyne AMP	Birds	Species specific	High	3	2	Medium

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Receptor	Key sensitivities / values	Relevant key periods	Baseline Priority	DTMI Ranking (Floating oil)	DTMI Ranking (Dissolved oil)	Initial Monitoring Priority
	Biologically important breeding habitat for seabirds: wedge-tailed shearwater (*Ardenna pacifica*) (least concern); roseate tern (*Sterna dougallii*) (least concern)					
	Turtle Biologically important internesting habitat for turtles	Main nesting: Hawksbill July-Mar Loggerhead Sept-Mar	High	3	3	Medium
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area. Pygmy blue whales (*Balaenoptera musculus brevicauda*) (endangered) foraging and migration area.	Pygmy blue whale migration: Apr to Aug (north bound) and Oct to Dec (south bound) Humpback whale migration: Jun to Oct	High	3	2	Medium
Ningaloo AMP	Coral and other subsea benthic primary producers Commonwealth waters adjacent to Ningaloo Reef (valued for high productivity and aggregations of marine life).	Coral spawning: Mar & Oct	Low	3	4	Medium
	Fish Continental slope demersal fish communities (valued for high levels of endemism and diversity).	-	Low	1	1	Medium
	Shark Foraging habitat for whale sharks (*Rhincodon typus*) (endangered)	Whale sharks – Mar to Jul	Low	3	4	High
	Birds Biologically important breeding habitat for seabirds: fairy tern (*Sternula nereis*) (vulnerable); wedge-tailed shearwater (*Ardenna pacifica*) (least concern); roseate tern (*Sterna dougallii*) (least concern)	Species specific	High	3	2	Medium
	Turtle Biologically important internesting habitat for turtles	Main nesting: Hawksbill July-Mar Green Sept-Mar Flatback Sept-Mar Loggerhead Sept-Mar	Low	4	3	Medium
	Marine mammals Humpback whale (*Megaptera novaeangliae*) (least concern) migration area. Pygmy blue whales (*Balaenoptera musculus brevicauda*) (endangered) foraging and migration area. Dugong (*Dugong dugon*) (vulnerable) breeding, calving, foraging and nursing habitat.	Pygmy blue whale migration: Apr to Aug (north bound) and Oct to Dec (south bound) Humpback whale migration: Jun to Oct	High	3	2	Medium
Argo-Rowley Terrace AMP	Benthic habitat The marine park contains ecosystems typical of two provincial settings: the Northwest Transition, with shelf break, continental slope, and much of the Argo Abyssal Plain, where Mermaid, Clerke, and Imperieuse Reefs form a biodiversity hotspot; and the Timor Province, dominated by warm, nutrient-poor waters in which submarine canyons are key drivers of productivity and marine life aggregations (Parks Australia n.d.).	-	High	3	4	High
	Birds Biologically important resting and breeding habitat for seabirds.	Species specific	High	3	2	Medium
	Marine mammals Migratory pathway for pygmy blue whales (*Balaenoptera musculus brevicauda*). The marine park contains submarine canyons that link the deep Argo Abyssal Plain with the shallower Rowley Terrace and Scott Plateau. These canyons transport sediments downslope and modify currents, creating periodic upwelling that increases surface-water productivity and provides important habitat for the pygmy blue whale.	April to December	High	3	2	Medium
Glomar Shoals	Benthic habitat Rocky hard substrates support diverse sessile benthic communities, including hard and foliose corals, sponges, octocorals, coralline algae and macroalgae. These coral, algal and filter-feeder assemblages provide essential habitat structure and food resources for demersal fish and sea snake populations.	-	Medium	3	4	High
	Fish	-	Medium	1	2	Low

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Receptor	Key sensitivities / values	Relevant key periods	Baseline Priority	DTMI Ranking (Floating oil)	DTMI Ranking (Dissolved oil)	Initial Monitoring Priority
	Important habitat for several commercially and recreationally targeted fish species, including Rankin cod (*Epinephelus multinotatus*), brown-striped snapper (*Lutjanus vitta*), red emperor (*Lutjanus sebae*), crimson snapper (*Lutjanus erythropterus*), bream (*Lethrinus spp.*) and yellow-spotted triggerfish (*Pseudobalistes fuscus*).					
	Turtle Turtle foraging area, green turtles (*Chelonia mydas*) primarily feed on macroalgae, while flatback turtles (*Natator depressus*) feed on benthic filter feeders.	-	High	3	2	Medum
Rankin Bank	Benthic habitat Benthic communities dominated by hard corals, macroalgae and filter feeders, particularly sponges and octocorals, with assemblage patterns strongly influenced by depth and seabed rugosity.	-	Medium	3	4	High
	Fish Rankin Bank supports diverse and abundant demersal fish assemblages strongly associated with hard coral and sponge habitats. Fish abundance and diversity are higher than at nearby Glomar Shoal, with the greatest richness occurring in shallow hard coral habitats.	-	Medium	1	2	Low
Reefs, shoals and banks	Coral and other subsea benthic primary producers	Coral spawning: Mar & Oct	High	3	4	High
	Marine mammals Humpback whale (*Megaptera novaeangliae*) migration area.	Humpback whale migration: Jun to Oct	High	3	2	Medium

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C.3 Mobilisation and timing of OMP and SMP implementation

Table C - 5 provides a list of OMPs and SMPs relevant to Petroleum Activity activities, as well as indicative timeframes for mobilisation of each OMP and SMP for key receptors. In addition, monitor and evaluate activities will capture initial observations of fauna, habitat, and other sensitive receptors. Water samples will be collected during vessel surveillance for OM1: Hydrocarbon Characterisation, when safe to do so. SCAT teams will begin mobilisation within 48–72 hours of notification and will also document fauna observations. This information will be provided to the IMT to aid early decision making per the process outlined in Section 18.1 of the OSM-BIP.

Table C - 5: Indicative OMP and SMP implementation schedule for OSM activities if initiation criteria are met

Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5–7 days from OSM activation	Weeks 1–2 from OSM activation	Ongoing
Spill site and surrounding waters	OM	• Activation of OMP Team Leads. • Finalise OMPs. • Aerial surveillance – which will also document fauna observations. • Commence activation and mobilisation of OM personnel.	• OM1: Hydrocarbon Characterisation, where resources are available (e.g. Supply Vessel with onboard sampling equipment). • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.	• Continued (as per ongoing arrangements)	Continued (as per ongoing arrangements)	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (e.g. Situation Unit) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill.
	SM	• Commence activation and mobilisation process. • Activation of SMP Team Leads.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM6: Benthic Habitat Assessment • SM7: Marine fish and elasmobranch assemblages assessment	Continued	Continue SMP monitoring until termination criteria are met
Sensitive receptors predicted to be contacted within 7 days	OM	• Activation of OMP Team Leads. • Finalise OMPs. • Aerial surveillance – which will also document fauna observations. • Commence activation and mobilisation of OM personnel.	• OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance • Continue to finalise OMPs. • Continue to activate and mobilise OM personnel.	• Continued (as per on-going arrangements)	Continued (as per on-going arrangements)	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Lead) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met
	SM	• Activation of SMP Team Leads and finalisation of SMPs.	• Continue to activate and mobilise personnel. • Work on finalising SMPs.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM4: Seabirds and Shorebirds • SM5: Marine Mega-fauna Assessment – Reptiles • SM5: Marine Mega-fauna Assessment –Cetaceans, Whale Sharks, Dugong • SM6: Benthic Habitat Assessment • SM7: Marine Fish and Elasmobranch Assemblages assessment • SM8: Fisheries impact assessment • SM9: Heritage Features Assessment • SM10: Social Impact Assessment	Continued	Continue SMP implementation until termination criteria are met.

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Proximity to spill source	Monitoring type	0–48 hours from OSM activation	Within 72 hours of OSM activation	~5–7 days from OSM activation	Weeks 1–2 from OSM activation	Ongoing
Sensitive receptors (including shorelines, reefs, banks and shoals) predicted to be contacted week 1–2	OM	–	–	• Additional Activation of OMP Team Leads. • Commence activation and mobilisation of additional OM personnel.	• Continue to finalise OMPs. • Continue to activate and mobilise OM personnel. • OM1: Hydrocarbon Characterisation • OM2: Hydrocarbons in Water Assessment • OM3: Hydrocarbons in Sediment Assessment • OM5: Rapid Marine Fauna Surveillance	As results from implemented OMPs are available, data are provided to relevant personnel in IMT (Situation Unit Leader) and used in the Incident Action Planning process for the next operational period. OMP is redesigned or reallocated according to the specifics of the actual spill until termination criteria are met
	SM	–	–	• Additional Activation of SMP Team Leads. • Commence activation and mobilisation of additional SM personnel.	• SM1: Water Quality Impact Assessment • SM2: Sediment Quality Impact Assessment • SM4: Seabirds and Shorebirds • SM5: Marine Mega-fauna Assessment – Reptiles • SM5: Marine Mega-fauna Assessment –Cetaceans, Whale Sharks, Dugong • SM6: Benthic Habitat Assessment • SM7: Marine Fish and Elasmobranch Assemblages assessment • SM8: Fisheries impact assessment • SM9: Heritage Features Assessment • SM10: Social Impact Assessment	Continue SMP monitoring until termination criteria are met

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C.4 Determine the OSM resourcing requirements and assess capability for the activity

To guide the resourcing requirements assessment for the Petroleum Activity, the spill scenario (see Table 2-1) most likely to require the greatest initial capability was selected for further assessment. Selection was based on stochastic modelling results, focussing on the scenario predicted to contact the greatest number of receptors at the low hydrocarbon thresholds for floating, shoreline or dissolved contact within 14 days and at the highest contact probabilities. If a receptor is only contacted by low concentrations of entrained hydrocarbons and not by any other hydrocarbon phase, it will be considered a lower priority during the initial monitoring response as outlined in Section 2.2 of the OSM-BIP. The hydrocarbon release caused by well loss of containment (subsea) (MEE-01 Scenario-01) was identified as the worst-case scenario, affecting the most locations within 14 days and determined to require the greatest OSM capability.

The first 14 days of the response has been selected as the focus area for the OSM resourcing assessment as it is the period during which resources are likely to be overwhelmed, before additional resources (including appropriately qualified personnel, suitable vessels and additional monitoring equipment) can be scaled in locally and from interstate and international resources. Other factors influencing the selection of the scenario with the highest capability requirements were location of the spill, proximity to receptors, and hydrocarbon properties. The OSM Services Provider Contract includes provision of scale-up resources, which would be considered and mobilised as soon as practicable following the spill.

Monitoring Units

Using the stochastic modelling results, Woodside has grouped the monitoring priorities for the Petroleum Activity activities into monitoring 'units' (Table C - 6). These units incorporate all of the possible receptors that may be contacted by the Petroleum Activity scenarios shown in Table C - 1 at a probability >10%. Receptors only contacted by entrained hydrocarbons and no other phase of hydrocarbon were not included. These unit groupings are based on consultation with experienced monitoring personnel and planners, who often group these receptors together for time-bound monitoring projects. The grouping of units is based on factors such as access and distance to ports, SIMOPS of multiple vessels and teams working in a close area, travel time between individual locations/receptors and time taken to collect samples for each SMP.

The monitoring units presented in Table C - 6 also include KEFs, BIAs and transient species. Additional information on the seasonality of the receptors can be found in Appendix B of the OSM-BIP and in Section 4.7 of the EP. Each monitoring unit will require 1-2 teams during the initial response (first 14 days). The number of teams allocated to each unit will depend on the extent of the spill, the outcome of the monitoring prioritisation finalised at the time of the spill (Section 13 of the OSM-BIP), the ALARP assessment, and SIMOPs.

It should be noted that not all monitoring units will be contacted by a single spill and that the list below has been generated from stochastic modelling results.

Table C - 6: Monitoring units for Petroleum Activity activities relevant to stochastic modelling results

Receptors within each Unit	Type
Barrow	
Humpback whale (migration)	BIA
Marine turtle	BIA
Pygmy blue whale (distribution)	BIA
Seabird and shorebird s	BIA
Whale shark (foraging)	BIA
Barrow Island (including Boodie and Middle Islands)	Islands
Lowendal Islands	Islands
Barrow Island MP (State)*	Marine Parks
Barrow Islands MMA	Marine Parks
Poivre Reef*	Reef, Shoals and Banks
Ancient Coastline at 125 m depth contour	KEF

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Receptors within each Unit	Type
Continental Slope Demersal Fish Communities*	KEF
Exmouth Plateau*	KEF
Middle Pilbara	
Humpback whale (migration)	BIA
Marine turtle s	BIA
Pygmy blue whale (distribution)	BIA
Seabird and shorebird	BIA
Middle Pilbara – Islands and Shoreline Airlie Island	Coastline
Great Sandy Island NR	Islands
Penguin Bank*	Reef, Shoals and Banks
Ripple Shoals*	Reef, Shoals and Banks
Trap Reef*	Reef, Shoals and Banks
Montebello	
Montebello AMP*	AMP
Humpback whale (migration)	BIA
Marine turtle s	BIA
Pygmy blue whale (distribution)	BIA
Seabird and shorebird	BIA
Montebello Islands (Including Hermite)	Islands
Montebello Islands MP*	Marine Parks
Montebello Shoals*	Reef, Shoals and Banks
Tryal Rocks*	Reef, Shoals and Banks
Ancient Coastline at 125 m depth contour	KEF
Continental Slope Demersal Fish Communities	KEF
Ningaloo nearshore	
Ningaloo AMP*	AMP
Exmouth and islands (including Rivoli Island)	Coastline
Exmouth Gulf South East	Coastline
Exmouth Gulf West	Coastline
Ningaloo Coast World Heritage	Heritage
Ningaloo MP (State)*	Marine Parks
Cape Range	National Park
Ningaloo Reef*	Reef, Shoals and Banks
North West Reef*	Reef, Shoals and Banks
Commonwealth Waters Adjacent to Ningaloo Reef	KEF
Continental Slope Demersal Fish Communities	KEF
Ningaloo offshore	
Gascoyne AMP*	AMP
Dugong	BIA
Marine turtle s	BIA

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Receptors within each Unit	Type
Pygmy blue whale (foraging and migration)	BIA
Seabird and shorebird s	BIA
Whale shark (foraging)	BIA
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	KEF
Commonwealth waters adjacent to the Ningaloo Reef	KEF
Continental Slope Demersal Fish Communities	KEF
Exmouth Plateau	KEF
Southern Pilbara	
Humpback whale (migration)	BIA
Marine turtle s	BIA
Pygmy blue whale (distribution)	BIA
Seabird and shorebird	BIA
Southern Pilbara – Islands and Shoreline Ashburton Island Bessieres Island Flat Island Fly Island Locker Island Observation Island Peak Island Round Island Serrurier Island Table Island Thevenard Island Tortoise Island	Coastline
Ashburton	Coastline
Thevenard Island NR	Nature Reserve
Muiron Islands	Islands
Muiron Islands MP MMA	Marine Parks
Australind Shoal*	Reef, Shoals and Banks
Baylis Patches*	Reef, Shoals and Banks
Brewis Reef*	Reef, Shoals and Banks
Combe Reef*	Reef, Shoals and Banks
Dailey Shoal*	Reef, Shoals and Banks
Fairway Reef*	Reef, Shoals and Banks
Glennie Patches*	Reef, Shoals and Banks
Hood Reef*	Reef, Shoals and Banks
Inner North West Patch*	Reef, Shoals and Banks
Locker Reef*	Reef, Shoals and Banks
Outtrim Patches*	Reef, Shoals and Banks
Otway Reef*	Reef, Shoals and Banks
Rosily Shoals*	Reef, Shoals and Banks

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Receptors within each Unit	Type
Roller Shoals*	Reef, Shoals and Banks
Santo Rock*	Reef, Shoals and Banks
Spider Reef*	Reef, Shoals and Banks
Tongue Shoals*	Reef, Shoals and Banks
Web Reef*	Reef, Shoals and Banks
Continental Slope Demersal Fish Communities	KEF
Ancient Coastline at 125 m depth contour	KEF
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula*	KEF
Offshore Environs	
Marine turtle	BIA
Pygmy blue whale (migration)	BIA
Seabird and shorebird	BIA
Whale shark (foraging)	BIA
Ancient Coastline at 125 m depth contour	KEF
Continental Slope Demersal Fish Communities	KEF
Glomar Shoals*	KEF
Rankin Bank*	Reef, Shoals and Banks
Control	
Control sites	All

**Submerged receptor that has no features above the sea surface.*

Deterministic modelling

To better understand worst-case capability OSM requirements for this activity, deterministic modelling was undertaken for the loss of well containment from the Yodel Updip well, releasing 300,985 m^3 Yodel-3 Condensate (MEE-01 Scenario-01). The deterministic run with the most receptors contacted by dissolved hydrocarbons at ≥10 ppb within 14 days (Q3, Run 09) was selected for further analysis. Deterministic modelling enables oil spill planners to assess the results of a single run from the stochastic oil spill modelling results, helping to assess the possible worst-case capability requirements. The results of this deterministic assessment are presented in Table C - 7.

To help understand which Monitoring Units will be contacted by the worst-case single spill, Figure C - 2 shows the Monitoring Units predicted to be contacted by the floating, shoreline and dissolved hydrocarbon phases.

The resources required to commence operational and scientific monitoring components during weeks 1–2 are presented in Table C - 8 and Table C - 9 respectively, which are based on the locations requiring a baseline review in Table C - 2, the implementation schedule outlined in Table C - 5, and the worst-case deterministic trajectory outlined in Table C - 7, including the resources required for monitoring unaffected control sites.

Woodside's OSM capability arrangements are detailed in Sections 9 and 10 of the OSM-BIP. These sections demonstrate that Woodside has established arrangements to mobilise up to 5-6 teams for most OMPs and SMPs, confirming that the OSM capability requirements for the Petroleum Activity (Table C - 8 and Table C - 9) are satisfied by the existing capability arrangements in the OSM-BIP.

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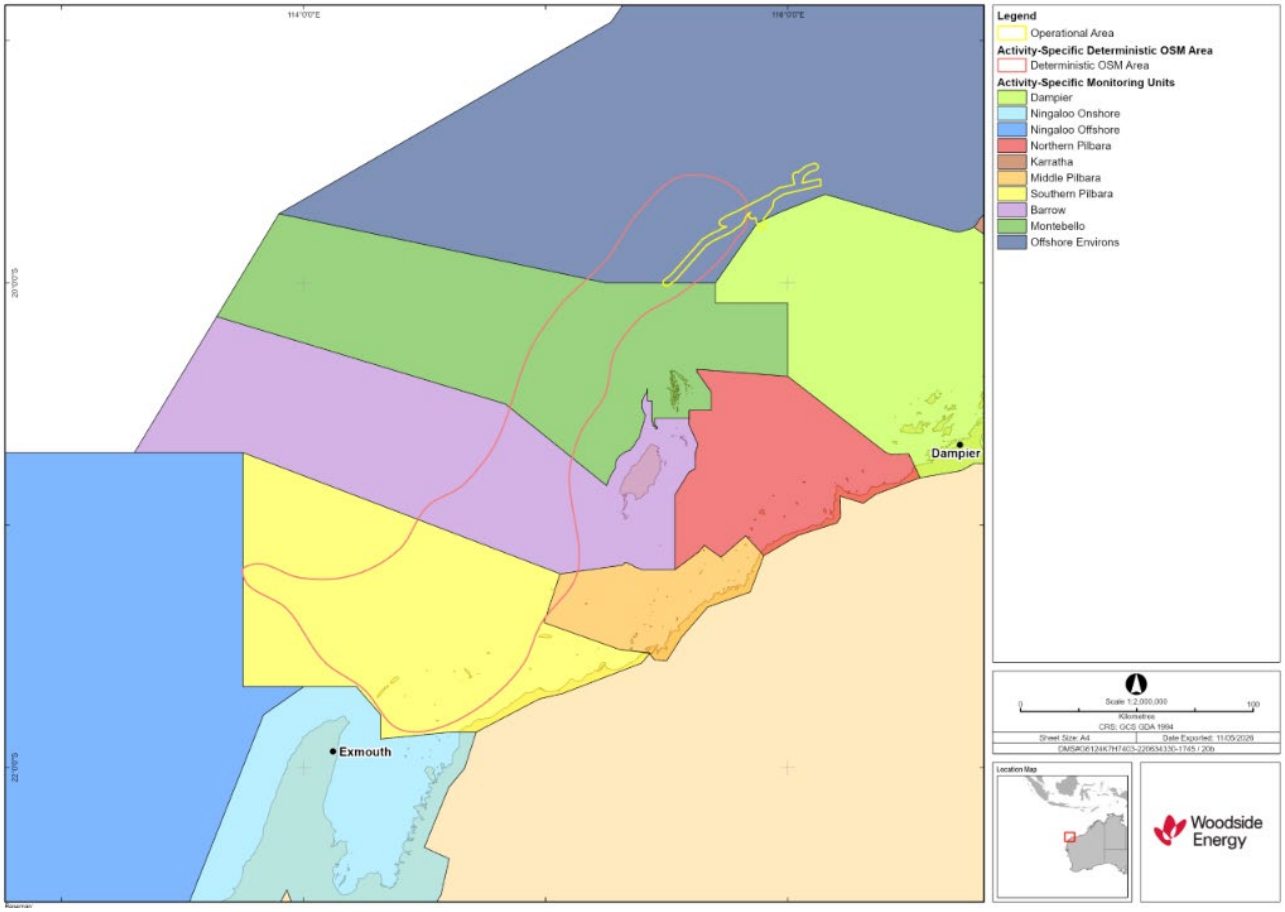


Figure C - 2: Monitoring Units predicted to be contact by Petroleum Activity worst case deterministic scenario

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Table C - 7: Deterministic modelling results (Q3, Run 09) – MEE-01 Scenario-01: Loss of well containment from Yodel Updip development well (300,985 m^3 Yodel-3 Condensate)

Scientific monitoring priority area	Minimum time (days) for contact by floating oil at ≥ 1 g/m²	Minimum time (days) for accumulation on shoreline at≥ 10 g/m²	Minimum time (days) for contact by entrained oil at≥ 10 ppb	Maximum entrained oil concentration (ppb)	Minimum time (days) for contact by dissolved hydrocarbons at ≥ 10 ppb	Maximum dissolved hydrocarbons concentration (ppb)
Montebello MP	NC	NA	1.63	734	2.42	1,403
Ningaloo	NC	NA	7.46	101	10.25	24
Pilbara (nearshore)	NC	NA	2.96	71	10.17	12
Cape Range	NC	NC	8.00	164	8.33	65
Bessieres Island	NC	NC	7.96	55	8.17	37
Flat Island	NC	NC	8.21	164	8.42	27
Muiron Islands	NC	NC	9.00	100	11.38	18
Peak Island	NC	NC	8.38	161	8.67	66
Round Island	NC	NC	8.46	76	10.58	24
Serrurier Island	NC	NC	8.13	136	9.13	29
Southern Pilbara – Islands	NC	NC	7.58	164	7.13	71
Sunday Island	NC	NC	9.08	69	9.13	14
Tortoise Island	NC	NC	14.67	16	12.67	12
Muiron Island MMA	NC	NC	8.83	100	9	22
Hood Reef	NC	NA	8.54	51	10.04	39
Rankin Bank	1.5	NA	0.42	1,026	0.46	3,209
Rosily Shoals	NC	NA	7.58	33	10.63	44
No Name Shoal	NC	NA	1.04	817	1.75	439
Wilcox Shoal	NC	NA	0.79	351	0.83	674

Key
Receptor contacted within 7 days
Receptor contacted within 14 days

*Submerged receptor that has no features above the sea surface. Modelling indicates ‘contact’ with these receptors when the hydrocarbons pass over the receptor on the sea surface

NA = not applicable

NC = no contact

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Table C - 8: Resources required for initially implementing operational monitoring plans for the Petroleum Activity spill scenarios

OMP	Week 1 (total)	Week 2 (total)	Arrangement
OM1: Hydrocarbon characterisation*^	1 team spill site and surrounds # 1 team Montebello Unit **Total 2 teams**	1 team spill site and surrounds # 1 team Montebello Unit 1 team Ningaloo Offshore Unit 1 team Ningaloo Nearshore Unit 1 team Southern Pilbara Unit **Total 5 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangements
OM2: Hydrocarbon in water assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers
OM3: Hydrocarbon in sediment assessment*	Refer to OMP: Hydrocarbon properties and weathering behaviour at sea resourcing* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers
OM5: Rapid marine fauna surveillance	1 team to conduct aerial surveys for spill site and surrounds and Montebello Unit, 1 team for Ningaloo Offshore, Ningaloo Nearshore and Southern Pilbara (2 observers per aircraft) **Total 2 teams** *Note: Fauna related SMPs are likely to be initiated simultaneously or following aerial assessment with vessel and ground based fauna surveys carried out as part of the relevant fauna SMP.*		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Aviation contractors
OM6: Shoreline clean-up assessment	Detail on resources required for shoreline clean-up assessment is presented in Section 5.6.		Australian Marine Oil Spill Centre (AMOSC) Master Services Agreement (MSA) and/or OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers State/Territory Response Teams and AMSA National Response Team
OM7: Air quality modelling (responder health and safety)	**1 model**	**1 model**	3rd party modelling provider / OSRO
Total number of teams	**4 teams**	**8 teams**	

Specific monitoring units are mentioned for planning and guidance purposes based on a worst-case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted and the ability to access these locations (i.e. with consideration of safety and simultaneous operations (SIMOPS)) would be assessed. This would be identified and managed as part of implementation as per the guidance in Section 13 of the BIP.

** Initial co-mobilisation between OMP: Hydrocarbon properties and weathering behaviour at sea, OMP: Water quality assessment, and OMP: Sediment quality assessment*

^ These resources may not be required if relevant scientific monitoring components' initiation criteria have been triggered.

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Table C - 9: Resources required for initially implementing scientific monitoring plans for Petroleum Activity spills

SMP	Week 1 (total)	Week 2 (total)	Arrangement
SM1: Water quality impact assessment *^	1 team spill site and surrounds 1 team Montebello Unit 1 team control site(s) **Total 3 teams**	1 spill site and surrounds 1 team Montebello Unit 1 team Ningaloo Offshore Unit 1 team Ningaloo Nearshore Unit 1 team Southern Pilbara Unit 1 team control site(s) **Total 6 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM2: Sediment quality impact assessment *	Refer to SMP: Water quality impact assessment* (all sites)		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM3: Intertidal and coastal habitat assessment	No shoreline contact predicted meeting criteria (>10% probability and within 14 days) **Total 0 ground-based teams**	No shoreline contact predicted meeting criteria (>10% probability and within 14 days) **Total 0 ground-based teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM4: Seabirds and shorebirds^	1 team to conduct initial aerial surveys for spill site and surrounds, and Montebello Units **Total 1 aerial team** 1 team spill site and surrounds 1 team Montebello Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 3 vessel-based teams** No shoreline contact predicted meeting criteria (>10% probability and within 14 days) **Total 0 ground-based teams**	1 team to conduct initial aerial surveys for spill site and surrounds, and Montebello Units **Total 1 aerial team** 1 spill site and surrounds 1 team Montebello Unit 1 team Ningaloo Offshore Unit 1 team Ningaloo Nearshore Unit 1 team Southern Pilbara Unit 1 team control site(s) (surveys would include all fauna [birds, reptiles, cetaceans, dugong and whale shark]) **Total 6 vessel-based teams** No shoreline contact predicted meeting criteria (>10% probability and within 14 days) **Total 0 ground-based teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM5: Marine mega-fauna assessment – whale shark, dugong and cetaceans^	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM5: Marine mega-fauna assessment – reptiles^	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	Aerial surveys refer to SMP: Seabirds and shorebirds Vessel surveys refer to SMP: Seabird and shorebirds Ground based survey refer to SMP: Seabird and shorebirds (including 1 member experienced with ground turtle surveys)	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM6: Benthic habitat assessment	1 team spill site and surrounds 1 team Montebello Unit 1 team control site(s) **Total 3 teams**	1 spill site and surrounds 1 team Montebello Unit 1 team Ningaloo Offshore Unit 1 team Ningaloo Nearshore Unit 1 team Southern Pilbara Unit 1 team control site(s) **Total 6 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM7: Marine fish and elasmobranch assemblages assessment	1 team spill site and surrounds 1 team Montebello Unit 1 team control site(s) **Total 3 teams**	1 spill site and surrounds 1 team Montebello Unit 1 team Ningaloo Offshore Unit 1 team Ningaloo Nearshore Unit 1 team Southern Pilbara Unit 1 team control site(s) **Total 6 teams**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement

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SMP	Week 1 (total)	Week 2 (total)	Arrangement
SM8: Fisheries impact assessment	**Total 2 teams** to cover all relevant Commonwealth and State fisheries – initial locations determined in consultation with key stakeholders to reflect current fishing zones/effort		OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM9: Heritage features assessment	**1 team**	**1 team**	OSRL OSM Supplementary Service Agreement Woodside Contracted Vessel Providers Laboratory arrangement
SM10: Social impact assessment	**1 team**	**1 team**	OSRL OSM Supplementary Service Agreement
Total number of teams	**17 teams**	**27 teams**	

[#] Specific monitoring units are mentioned for planning and guidance purposes based on a worst case planning approach. In the event of an actual spill, other locations and/or receptors may be contacted and the ability to access these locations (i.e. with consideration of safety and SIMOPS) would be assessed. This would be identified and managed as part of implementation as per the guidance in Section 13 of the BIP.

** Initial co-mobilisation between SMP: Water quality impact assessment and SMP: Sediment quality impact assessment.*

^ Can initially be performed by the same team as the relevant OMP. This SMP may replace the relevant OMP, if the relevant OMP's termination criteria are triggered.

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ANNEX D: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef – Refer to Mangrove/ Turquoise Bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrolhos Islands: Pelseart Group
Abrolhos Islands: Wallabi Group
Abrolhos Islands: Easter Group
Dampier
Rankin Bank & Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands – Southern Island Group
Montebello Island – Stephenson Channel Nth TRP
Montebello Island – Champagne Bay and Chippendale channel TRP
Montebello Island – Claret Bay TRP
Montebello Island – Hermite/Delta Island Channel TRP
Montebello Island – Hock Bay TRP
Montebello Island – North and Kelvin Channel TRP
Montebello Island – Sherry Lagoon Entrance TRP
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Island – Dampier

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Rosemary Island – Dampier
Legendre Island – Dampier
Karratha Gas Plant
KGP to Withnell Creek
KGP to Northern Shore
KGP Fire Pond & Estuary
KGP to No Name Creek
Broome
Sahul Shelf Submerged Banks and Shoals
Clerke Reef (Rowley Shoals)
Imperieuse Island (Rowley Shoals)
Mermaid Reef (Rowley Shoals)
Scott Reef
Oiled Wildlife Response
Exmouth
Dampier region
Shark Bay

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APPENDIX H OIL POLLUTION FIRST STRIKE PLAN

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Woodside Energy

Goodwyn Alpha Facility Operations – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

August 2026

Revision 10a

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CONTROL AGENCIES AND INCIDENT CONTROLLERS

Source	Location	Level	Jurisdictional Authority/ Hazard Management Agency	Control Agency	Incident Controller
Spill from facility including subsea infrastructure Note: pipe laying and accommodation vessels are considered a "facility" under Australian regulations	Commonwealth waters	1	NOPSEMA	Woodside	Person In Charge (PIC) with support from Onshore Team Leader (OTL)
		2/3		Woodside	Corporate Incident Management Team Incident Commander (CIMT IC)
	State waters	1/2/3	Western Australian Department of Transport and Major Infrastructure (DTMI)	DTMI	DTMI Incident Controller
	Within port limits	1	DTMI	Port Authority	Port Harbour Master
		2/3		Port Authority/ DTMI	Port Harbour Master/ DTMI Incident Controller
Spill from vessel Note: SOPEP should be implemented in conjunction with this document	Commonwealth waters	1	Australian Marine Safety Authority (AMSA)	AMSA	Vessel Master
		2/3		AMSA	AMSA (with response assistance from Woodside)
	State waters	1/2/3	DTMI	DTMI	DTMI Incident Controller
	Within port limits	1	DTMI	Port Authority	Port Harbour Master
		2/3		Port Authority/ DTMI	Port Harbour Master/ DTMI Incident Controller

SPILLS IN STATE/PORT WATERS

In the event of a hydrocarbon spill (hereafter 'spill') where Woodside Energy Ltd ('Woodside') is the responsible party and the spill may impact State waters and shorelines, Woodside (or the Vessel Master) will commence the initial response actions and notify the Western Australian Department of Transport and Major Infrastructure (DTMI). In the event that Woodside is the responsible party for a spill that occurs within port limits or impacts port waters, Woodside will notify the Port Authority and DTMI for all spills.

Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DTMI IMT (APPENDIX F – Woodside Liaison Officer Resources to DTMI). DTMI / the Port Authority's role as the Controlling Agency in State waters/ within port limits does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a marine hydrocarbon spill incident in State Waters/ within port limits or to commence the initial response actions to a spill prior to DTMI establishing incident control in line with DTMI *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (July 2020). Cost recovery arrangements for offshore marine pollution incidents (MOP) are in accordance with Section 9 of the Guidance Note:

https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf

Woodside's Incident Management Structure for a hydrocarbon spill, including Woodside Liaison Officer's command structure within DTMI can be seen at APPENDIX E – Woodside Incident Management Structure.

The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines is shown in APPENDIX D – Coordination structure for a concurrent hydrocarbon spill in both commonwealth and state waters/ shorelines.

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RESPONSE PROCESS OVERVIEW

For guidance on credible scenarios and hydrocarbon characteristics, refer to APPENDIX A

ALL INCIDENTS

Notify the Woodside Communication Centre (WCC) on:

[1]

If further support required, Incident Commander or delegate to implement this Oil Pollution First Strike Plan per relevant actions detailed in **Table 1-1** and **Table 2-1**.

LEVEL 1

FACILITY INCIDENT	VESSEL INCIDENT
Coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan. Remember to download each Operational Plan.	Notify AMSA or Port Authority (if within port limits) and coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan Remember to download each Operational Plan.

If the spill escalates such that the site cannot manage the incident, inform the WCC on:

[1] and escalate to a level 2/3 incident.

LEVEL 2/3

FACILITY INCIDENT	VESSEL INCIDENT
Handover control to CIMT and notify DTMI or Port Authority (if within port limits)	Handover control to AMSA or Port Authority (if within port limits) and stand up CIMT to assist.
Commence quick revalidation of the recommended strategies in **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.	If requested by AMSA/Port Authority: Commence quick revalidation of the recommended strategies in **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.
Create an Incident Action Plan (IAP) for all ongoing operational periods. The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A	If requested by AMSA/Port Authority: Create an IAP for all ongoing operational periods. The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational NEBA see the OSPRMA Appendix A

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1. NOTIFICATIONS

The Incident Controller or delegate must ensure the below notifications (Table 1-1) are completed within the designated timeframes.

For spills from a vessel, relevant notifications must be undertaken by a Woodside representative.

Table 1-1: Notifications

In the event of an incident between campaign vessels, also activate relevant vessel Emergency Response Plans and/or Bridging Documents

Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
Immediately	Offshore Installation Manager (OIM) or Vessel Master	Woodside Communication Centre (WCC)	Corporate Incident Management Team Incident Commander (CIMT IC)	[1]	Verbally notify WCC of event and estimated volume and hydrocarbon type. If further support required, implement this Oil Pollution First Strike Plan per relevant actions detailed in Table 1-1 and Table 2-1.	Verbal	
Within 2 hours	Woodside Site Rep (WSR), CIMT IC or Delegate	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[2]	Verbally notify NOPSEMA for spills >80 litres[2]. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DMPE).	Link	
Within 3 days	WSR, CIMT IC or Delegate				Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DMPE) NOPSEMA [2] NOPTA [3] DMPE [4]	[2]	
As soon as practicable	CIMT IC or Delegate	Woodside	Environment Unit Leader	As per roster	Verbally notify Environment Unit Leader of event and seek advice on relevant performance standards from EP	Verbal	
Within 2 hours of becoming aware of a marine pollution incident (MOP) that occurs in or may impact state waters	CIMT IC or Delegate	WA Department of Transport and Major Infrastructure (DTMI)	DTMI Maritime Environmental Emergency Response Unit (MEER) Duty Officer	[5]	Verbally notify DTMI MEER Duty Officer that a spill has occurred and, if required, request use of equipment stored in Karratha. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification. Additionally, DTMI to be notified if spill is likely to extend into WA State waters. Request DTMI to provide Liaison to Woodside IMT.	[5]	
Within 24 hours of Woodside reporting the incident to the appropriate authority	CIMT IC or Delegate	Department of Primary Industries and Regional Development (DPIRD)			Notification to DPIRD via email within 24 hours of Woodside reporting the incident to the appropriate authority [6]	Email	
Within 24 hours of Woodside reporting the incident to the appropriate authority	CIMT IC or Delegate	WA Fishing Industry Council (WAFIC)	Industry Liaison Officer	[7]	Notification to WAFIC via email within 24 hours of Woodside reporting the incident to the appropriate authority: [7]	Verbal/ email	
As soon as practicable if spill arises in or is likely to extend into port limits.	CIMT IC or Delegate	Pilbara Ports	Pilbara Ports Dampier Vessel Traffic Services (VTS)	[8]	Any gas or liquid hydrocarbon release within or close to the Dampier Port boundary should be reported immediately to the Pilbara Ports Dampier VTS	Verbal/ [8]	
As soon as practicable	CIMT IC or Delegate	Department of Climate Change, Energy, the Environment and Water (DCCEEW) Director of National Parks (DNP)	Marine Park Compliance Duty Officer	[9]	The DNP should be made aware of oil/gas pollution incidences which occur within a marine park or are likely to impact on a marine park as soon as possible. Notification should be provided to the 24 hour Marine Compliance Duty Officer. The notification should include: • titleholder details • time and location of the incident (including name of marine park likely to be effected) • proposed response arrangements as per the Oil Pollution Emergency Plan (e.g. dispersant, containment, etc.)	Verbal	

[1] Notification to NOPSEMA must be from a Woodside Representative.

[2] An uncontrolled release of petroleum liquids exceeding 80 litres is required to be reported as a dangerous occurrence related to safety at a facility, under clause 82 of Schedule 3 of the OPGGS Act and Part 4 of the Safety Regulations.

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Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
					• confirmation of providing access to relevant monitoring and evaluation reports when available; and • contact details for the response coordinator. Note that the DNP may request daily or weekly Situation Reports, depending on the scale and severity of the pollution incident		
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA Department of Biodiversity, Conservation and Attractions	CIMT IC or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	[10]	Phone call notification	Verbal	
As soon as practicable	Public Information	Relevant persons/ organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers or tourism operators may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Goodwyn Alpha Facility Operations. Relevant persons/ organisations will be re-assessed throughout the response period.	Verbal initially	
As soon as practicable	Public Information	Relevant cultural authorities	To be determined	To be determined	Should it be identified that relevant cultural authorities may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Goodwyn Alpha Facility Operations. Relevant cultural authorities will be re-assessed throughout the response period.	Verbal initially	
ADDITIONAL NOTIFICATIONS TO BE MADE ONLY IF SPILL IS FROM A VESSEL							
"Without delay" as per *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) s 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Rescue Coordination Centre (RCC)	[11]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Harmful Substances Report (POLREP) as soon as practicable following verbal notification.	[11]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT IC or Delegate	AMOSC	AMOSC Duty Manager	[12]	Notify AMOSC that a spill has occurred and follow-up with an email from the **CIMT IC/ CIMT Deputy IC/ CMT Leader** to formally activate AMOSC. Determine what resources are required consistent with the AMOSPlan and detail in a Service Contract that will be sent to Woodside from AMOSC upon activation.	[12]	
As soon as practicable	CIMT IC or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[13]	Notification for all services: • Contact OSRL duty manager and request assistance from technical advisor. • Send the completed notification form to OSRL as soon as practicable.	[13]	
					Mobilisation of response personnel/ equipment: For mobilisation of response personnel/ resources, send the Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside i.e. **CIMT IC/ CIMT Deputy IC/ CMT Leader**. OSRL can advise the names on the call out authority list, if required.	[13]	
					Mobilisation of Operational and Scientific Monitoring service: For mobilisation of Operational and Scientific Monitoring (OSM) service, send the OSM Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside i.e. **CIMT IC/ CIMT Deputy IC/ CMT Leader**. OSRL can advise the names on the call out authority list, if required.	[13]	
As soon as practicable if extra personnel are required for incident support	CIMT IC or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[14]	Activate the contract with MSRC (in full) for the provision of up to 14 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

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2. RESPONSE TECHNIQUES

Table 2-1: Response techniques

Technique	Spill type		Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MDO	Cond.					
Monitor and evaluate – tracking buoy	Yes	Yes	ALL	Deploy the oil spill tracking buoy within 2 hours in the event of release of hydrocarbons to the marine environment. If no oil spill tracking buoy is available, mobilise unit from the King Bay Supply Facility (KBSF) stockpile.	Operations	**WITHIN 2 HOURS:** Tracking buoy deployed within 2 hours.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk in Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with Link.
Monitor and evaluate – predictive modelling	Yes	Yes	ALL	Undertake initial modelling using OceansMap and weathering fate analysis using Automated Data Inquiry for Oil Spills (ADIOS) or refer to the hydrocarbon information in Appendix A.	Environment	**WITHIN 24 HOURS:** Initial modelling within 6 hours using the OceansMap tool.	Predictive Modelling of Hydrocarbons to Assess Resources at Risk in Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
	Yes	Yes	ALL	Send Oil Spill Trajectory Modelling (OSTM) form (Appendix B, Form 7) to RPS Response ([15]). Outputs will be uploaded to OceansMap by RPS.	Environment	**WITHIN 24 HOURS:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Monitor and evaluate – aerial surveillance	Yes	Yes	ALL	Aviation Unit Leader to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in Appendix B Form 8.	Logistics – Aviation	**WITHIN 24 HOURS:** 2 trained aerial observers. 1 aircraft available. Report made available to the IMT within 2 hours of landing after each sortie.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk in Operational Monitoring Operational Plan. *Planning Section to download immediately and follow steps*
Monitor and evaluate – satellite tracking	Yes	Yes	ALL	Environment Unit Leader to action satellite imagery services. This may be obtained via: • AMOSC Duty Manager: [12] • OSRL Duty Manager: [13] • KSAT: [16] • Others identified by CIMT	Environment	**WITHIN 24 HOURS:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Revalidate pre-operational NEBA	Yes	Yes	ALL	Environment Unit Leader to revalidate pre-operational NEBA against current situational awareness from monitor and evaluate techniques.	Environment	**WITHIN 24 HOURS**: Revalidate pre-operational NEBA and incorporate into IAP	Pre-operational NEBAs
Monitor and evaluate – pre-emptive assessment of receptors at risk	Yes	Yes	ALL	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk.	Planning or Environment	In agreement with WA DTMI, deployment of 2 specialists for each of the Response Protection Areas (RPA) with predicted impacts.	Pre-emptive Assessment of Sensitive Receptors in Operational Monitoring Operational Plan.
Operational monitoring – shoreline assessment	Yes	Yes	ALL	Consider the need to mobilise resources to undertake shoreline assessment surveys.	Planning or Environment	In agreement with WA DTMI, deployment of 2 specialists trained in Shoreline Clean-up Assessment Technique (SCAT) for each of the RPAs with predicted impacts.	Mobilise OSM service via OSRL: [13] Refer to OSM Bridging Implementation Plan – Part B for additional implementation information: Link Refer to Joint Industry Operational And Scientific Monitoring Plan Framework for activation criteria and additional supporting information.
Operational and Scientific Monitoring	Yes	Yes	ALL	Consider the need to mobilise OSM resources via third party service provider.	Environment	**WITHIN 4 HOURS**: Notify service provider of spill event. **OSM:** OMPs and SMPs will be activated in accordance with the initiation criteria provided in Tables 9-1 and 9-2 of the Joint Industry OSM Framework (APPEA [now AEP], 2021)	
Surface dispersant	No	No	N/A	This response strategy is not recommended.			
Containment and recovery	No	Potentially	L2/3	Mobilise equipment from Woodside, AMOSC and State stockpiles and relevant personnel. Consider mobilisation of interstate/international containment and recovery equipment and relevant personnel (i.e. OSRL).	Logistics and Planning	**WITHIN 48 HOURS:** 2 containment and recovery operations deployed within 48 hours (if required). **DAY 4:** 2 additional containment and recovery operations using 3rd party provider resources available by day 4 (if required).	Containment and Recovery Operational Plan *Logistics Section to download and follow steps*

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Technique	Spill type		Level	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MDO	Cond.					
Mechanical dispersion	**No**	**No**	**N/A**	This response strategy is not recommended.			
In-situ burning	**No**	**No**	**N/A**	This response strategy is not recommended.			
Shoreline protection and deflection	**No**	**Yes**	**L 2/3**	Equipment from Woodside, AMOSC and State stockpiles mobilised. Consideration of mobilisation of interstate/international shoreline protection equipment (i.e. OSRL).	Operations and Planning	In agreement with WA DoT, activate relevant Tactical Response Plans (TRPs) 5 days prior to impact. In agreement with WA DoT, mobilise teams to RPAs 5 days prior to impact. In agreement with WA DoT, equipment mobilised from closest stockpile 5 days prior to impact. Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles 5 days prior to impact.	Protection and Deflection Operational Plan *Logistics Section to download immediately and follow steps*
Shoreline clean-up	**No**	**Yes**	**L 2/3**	Equipment from Woodside, AMOSC and State stockpiles and relevant personnel mobilised. Consideration of mobilisation of interstate/international shoreline clean-up equipment and relevant personnel (i.e. OSRL).	Logistics and Planning	One shoreline clean-up team to each contaminated RPA 5 days prior to impact. TRPs available for at risk shorelines 5 days prior to impact. Access to at least 89 m3 of solid and liquid waste storage available by month 3, from third party contractors.	Shoreline Clean-up Operational Plan *Logistics Section to download immediately and follow steps*
Oiled wildlife response	**Yes**	**Yes**	**ALL**	If oiled wildlife is a potential impact, request AMOSC to mobilise containerised oiled wildlife first strike kits and relevant personnel. Refer to relevant Tactical Response Plan for potential wildlife at risk. Mobilise AMOSC Oiled Wildlife Containers. Consider whether additional equipment is required from local suppliers.	Logistics and Planning	**DAY 5:** Contracted capability to treat up to an additional 250 individual fauna within a five-day period. Facilities for oiled wildlife rehabilitation are operational 24/7	Oiled Wildlife Response Operational Plan
SOURCE CONTROL TECNIQUES							
Subsea First Response Toolkit	**No**	**Yes**	**L2/3**		Source Control	**WITHIN 48 HOURS:** Remotely Operated Vehicle (ROV) on Mobile Offshore Drilling Unit (MODU) ready for deployment within 48 hours	Wells Global Source Control Emergency Plan
Subsea Dispersant	**No**	**No**	**N/A**	This response strategy is not recommended.			
Capping Stack	**No**	**Yes**	**L2/3**	Capping stack deployment is not feasible for platform wellheads and may not be feasible where water depths are <100 m. For the wells located in >100 m water depth, conventional/ vertical capping stack deployment with a heavy lift vessel will be attempted if plume and environmental conditions permit (wind speed, wave height and current) and will be assessed on a case-by-case basis and at the discretion of the vessel master.	Source Control	**DAY 16:** Capping stack deployed by a chartered construction vessel.	
Relief Well	**No**	**Yes**	**L2/3**	As per Source Control Emergency Response Plan	Source Control	**WITHIN 24 HOURS**: Identify source control vessel availability within 24 hours. ROV on MODU ready for deployment within 48 hours. MODU mobilised to location	

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3. RESPONSE PROTECTION AREAS

Action: Provide relevant Control Agency with applicable Tactical Response Plans for any Response Protection Areas (RPAs) identified during operational monitoring.

Based on hydrocarbon spill modelling results, no receptors have been identified as priority protection areas, as none have the potential to be contacted by hydrocarbon at or above impact threshold levels within 48 hours of a spill.

Hydrocarbon spill modelling results indicate the sensitive receptors listed below have the potential to be contacted by hydrocarbons beyond 48 hours of a spill:

- Muiron Islands / Muiron Islands Management Area (day 71.4)

Tactical Response plans for this location can be accessed via the link here and include the details of potential forward operating bases and staging areas.

Oil Spill Trajectory Modelling specific to the spill event will be required to determine the regional sensitive receptors to be contacted beyond 48 hours of a spill.

Figure 3-1 illustrates the location of regional sensitive receptors in relation to the Goodwyn Alpha Facility Operations Operational Area.

Consideration should be given to other stakeholders (including mariners) in the vicinity of the spill location. **Table 3-1** indicates the assets within the vicinity of the Goodwyn Alpha Facility Operations Operational Area.

Table 3-1: Assets in the vicinity of the Goodwyn Alpha Facility Operations Operational Area

Asset	Distance and direction from Operational Area	Operator
North Rankin Complex	Adjacent to Operational Area	Woodside
Pluto Platform	12.2 km west	Woodside
Okha FPSO	32.8 km east	Woodside
Angel Platform	49.4 km east north east	Woodside
Wheatstone Platform	12.6 km north west	Chevron
Reindeer Platform	50.4 km south south east	Santos
Wandoo A/B	73.2 km south east	Vermillion
Stag	77.6 km south south east	Jadestone

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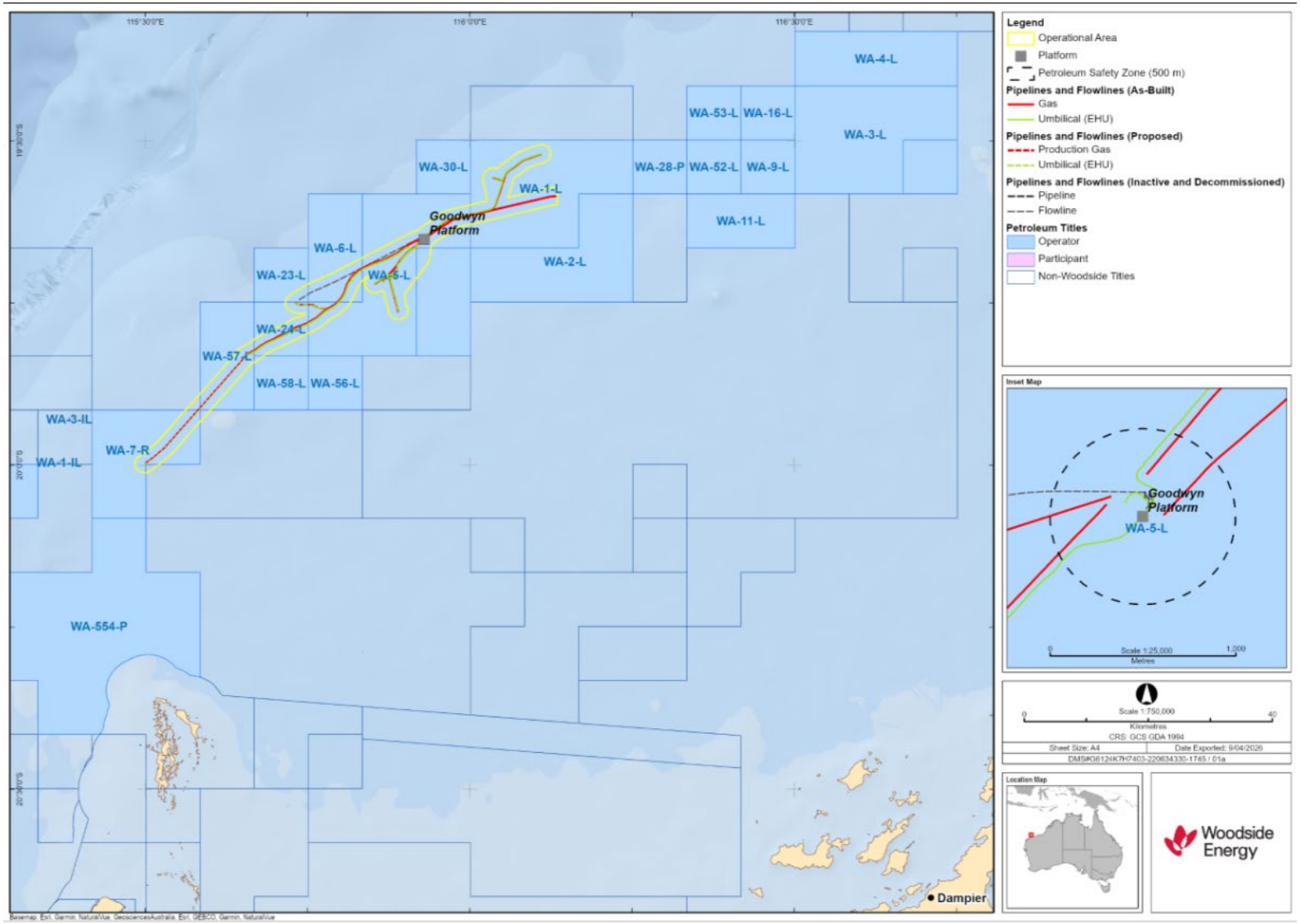


Figure 3-1: Operational area

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4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the Goodwyn Alpha Facility Operations Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

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5. GLOSSARY AND ABBREVIATIONS

Term	Definition
ADIOS	Automated Data Inquiry for Oil Spills
AEP	Australian Energy Producers (formerly Australian Petroleum Production & Exploration Association)
ALARP	As low as reasonably practicable. Demonstration through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce risks further.
AMOSC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production & Exploration Association (now AEP)
BP	Boiling point
CIMT	Corporate Incident Management Team
CS	Credible Scenario
DBCA	Western Australian Department of Biodiversity, Conservation and Attractions
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DMPE	Western Australian Department of Mining, Petroleum and Exploration
DNP	Director of National Parks
DPIRD	Western Australian Department of Primary Industries and Regional Development
DTMI	Western Australian Department of Transport and Major Infrastructure
EOC	Emergency Operations Centre
EP	Environment Plan
FOB	Forward Operating Base
HMA	Hazard Management Agency
HSE	Health, safety and environment
IAP	Incident Action Plan
IC	Incident Commander
ICC	Incident Control Centre
IMT	Incident Management Team
KBSB	King Bay Supply Base
MDO	Marine Diesel Oil
MEECC	Maritime Environmental Emergency Coordination Centre
MEER	Maritime Environmental Emergency Response
MGO	Marine gas oil
MOP	Marine oil pollution
MSRC	Marine Spill Response Corporation
N/A	Not applicable / available
NEBA	Net Environmental Benefit Analysis
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority (Australia)
OIM	Offshore Installation Manager
OPEP	Oil Pollution Emergency Plan
OSM	Operational and Scientific Monitoring

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Term	Definition
OSPRMA	Oil Spill Preparedness and Response Mitigation Assessment
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OTL	Onshore Team Leader
PIC	Person In Charge
POLREP	Pollution Report
RCC	Rescue Coordination Centre
RPA	Response Protection Area
SCAT	Shoreline Clean-up Assessment Technique
SMPC	State Marine Pollution Coordinator
SOPEP	Shipboard Oil Pollution Emergency Plan
TRP	Tactical Response Plan
WA	Western Australia
WAFIC	WA Fishing Industry Council
WCC	Woodside Communications Centre
WCCS	Worst Case Credible Scenario
WSR	Woodside representative

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APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

Table A - 1: Credible spill scenarios and hydrocarbon information

Scenario	Product	API gravity	Volume	Residue	Weathering rate		Suggested ADIOS2 Analogue[3]
MEE-01 Scenario-01 (WCCS) Well blowout: hydrocarbon release caused by well loss of containment (subsea)	*Yodel-3 Condensate*	54.4°	300,985 m^3	2.5% of 7,524.62 m^3	12 hours (BP < 180 °C)	63.1%	*NWS Condensate*
					24 hours (180 °C < BP < 265 °C)	25.3%	
					Several days (265 °C < BP < 380 °C)	9.1%	
MEE-01 Scenario-02 Well blowout: hydrocarbon release caused by well loss of containment (surface)	*GWA-03 Condensate*	57.6°	171,033m^3	1.6% of 2,736.53 m^3	12 hours (BP < 180 °C)	71.6%	*NWS Condensate*
					24 hours (180 °C < BP < 265 °C)	19.8%	
					Several days (265 °C < BP < 380 °C)	7.0%	
MEE-05 Scenario-08 Instantaneous release after a loss of marine vessel separation or vessel collision	*MDO*	37.2°	1000 m^3	5% residue of 50 m^3	12 hours (BP < 180 °C)	6.0%	Diesel Fuel Oil – Southern USA 1 (API 37.2°)
					24 hours (180 °C < BP < 265 °C)	34.6%	
					Several days (265 °C < BP < 380 °C)	54.4%	

[3] Initial screening of possible ADIOS2 analogues considered hydrocarbons with similar APIs. Suggested selection is based on the closest distillation cut to the Woodside hydrocarbon. Only hydrocarbons with >380°C distillation cuts were included in selection process.

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APPENDIX B – NOTIFICATION FORMS

Table B - 1: Notification forms

No.	Form Name	Link
1	Record of initial verbal notification to NOPSEMA template	Link
2	NOPSEMA Incident Report Form	[2]
3	Harmful Substances Report (POLREP – AMSA)	[11]
4	Marine Pollution Report (POLREP – DTMI)	[5]
5	Pilbara Ports Incident Reporting Form	[8]
6	AMOSC Service Contract	[12]
7a	OSRL Initial Notification Form	[13]
7b	OSRL Mobilisation Activation Form	[13]
7c	OSRL Operational and Scientific Monitoring Service Mobilisation Form	[13]
8	RPS Response Oil Spill Trajectory Modelling Request	[15]
9	Aerial Surveillance Observer Log	Link
10	Tracking buoy deployment instructions	Link

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FORM 1 – RECORD OF INITIAL VERBAL NOTIFICATION TO NOPSEMA

Woodside Energy

NOPSEMA phone: [2]		
Date of call		
Time of call		
Call made by		
Call made to		
Information to be provided to NOPSEMA:		
Date and time of incident/ time caller became aware of incident		
Details of incident	**1. Location**	
	2. Title	
	3. Source	**□ Platform**
		□ Pipeline
		□ FPSO
		□ Exploration drilling
		□ Well
		□ Other (please specify)
	4. Hydrocarbon type	
	5. Estimated volume	
	6. Has the discharge ceased?	
	7. Fire, explosion or collision?	
	8. Environment Plan(s)	
	9. Other Details	
Actions taken to avoid or mitigate environmental impacts		
Corrective actions taken or proposed to stop, control or remedy the incident		
After the initial call is made to NOPSEMA, please send this record as soon as practicable to:		
NOPSEMA	**[2]**	
NOPTA	**[3]**	
DMPE	**[4]**	

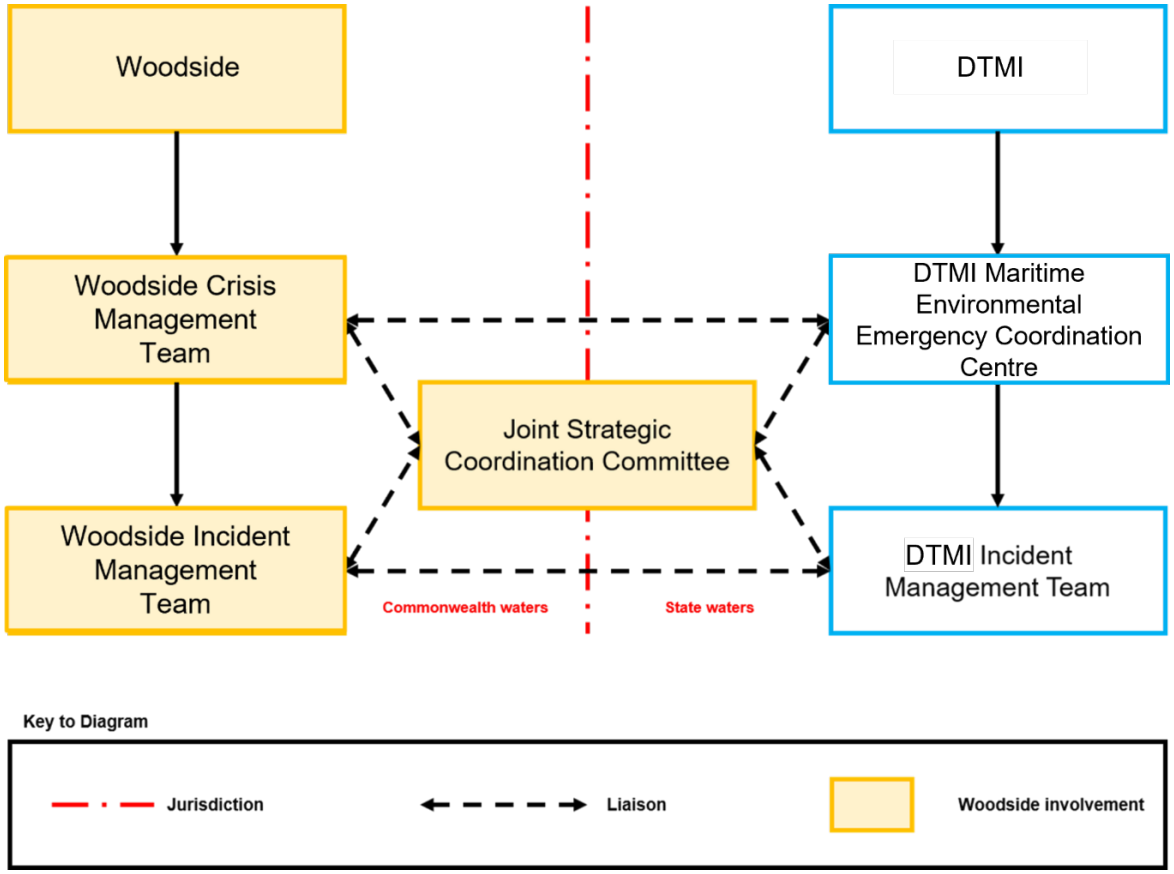
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APPENDIX C – SPILL ASSESSMENT QUESTIONS

What has happened?		
Date/time		
Spill source		
Spill cause		
Safety situation		
What is it?		
Oil type and name		
Oil properties	Specific gravity	
	Viscosity	
	Pour point	
	Asphaltenes	
	Wax content	
	Boiling point	
Where is it?		
Latitude and longitude		
Distance and bearing		
Affected area	☐ Offshore	
	☐ Subsea	
	☐ Shoreline	
	☐ Estuary	
	☐ Port	
	☐ Harbour	
	☐ Inland	
	☐ River	
	☐ Other (please detail):	
Water depth		
How big is it?		
Area		
Release type	☐ Instantaneous	Estimated volume:
	☐ Continuous release	Estimated release rate:
Where is it going?		
Metocean conditions		
Currents and tides		
What is in the way?		
Resources at risk		
Time until resource contact		
What's happening to it?		
Weathering processes		
Response actions underway		

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APPENDIX D – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/SHORELINES[4]



The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

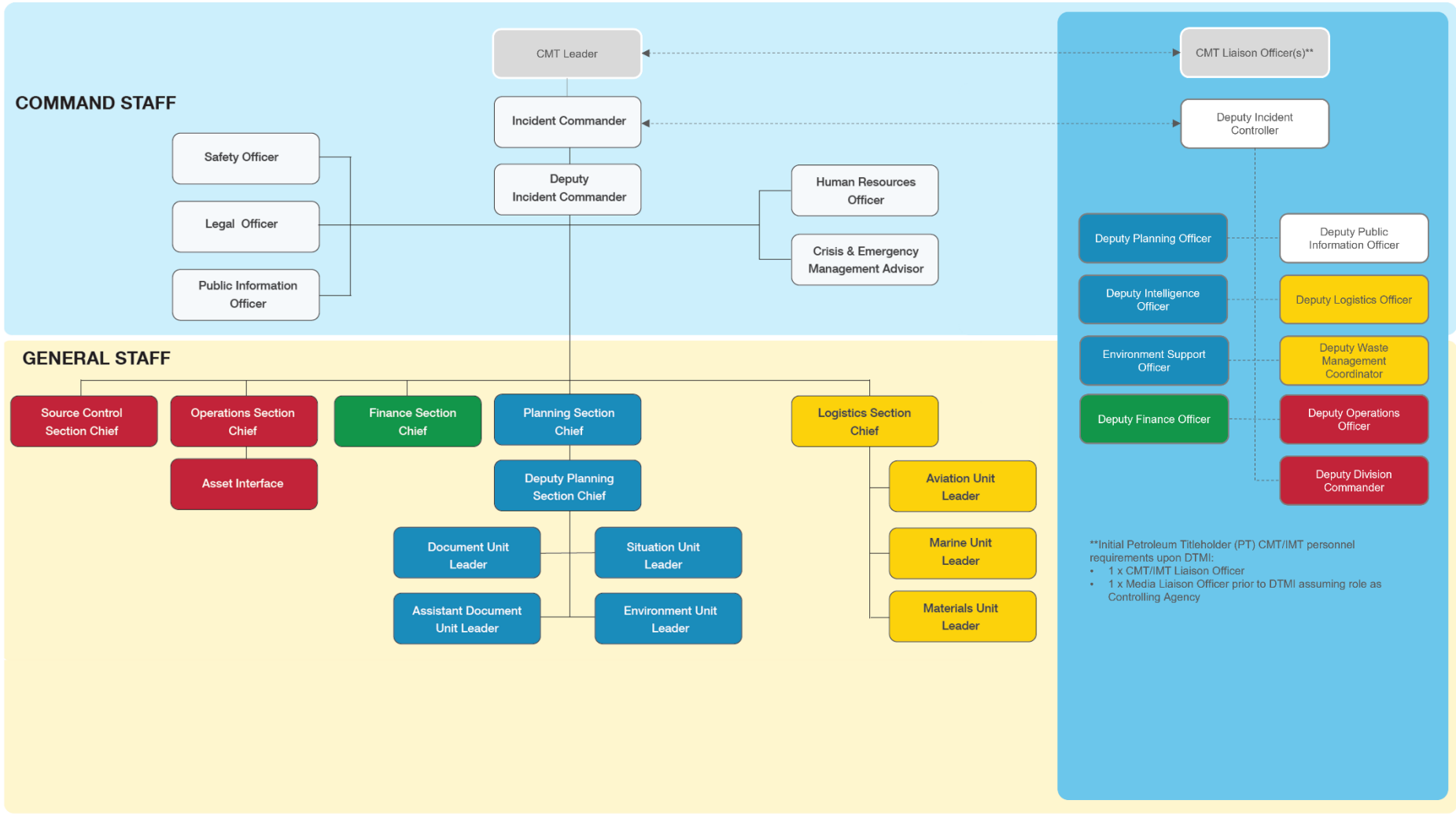
The Control Agency/ Hazard Management Agency (HMA) for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DTMI. DTMI will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

[4] Adapted from DTMI Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangements July 2020. Note: For full structure up to Commonwealth Cabinet/Minister refer to Marine Oil Pollution: Response and Consultation Arrangements Section 6.5, Figure 4.

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APPENDIX E – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DTMI IMT if required) is shown below. Woodside's CIMT would operate from the Emergency Operations Centre (EOC) at the Woodside headquarters in Perth.



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APPENDIX F – WOODSIDE LIAISON OFFICER RESOURCES TO DTMI

In the event that DTMI is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DTMI IMT.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DTMI Fremantle Incident Control Centre (ICC) as soon as possible after the formal request has been made by the State Marine Pollution Coordinator (SMPC), and that the remaining initial cohort will attend no later than 8 am on the day following the request being formally made to Woodside by the SMPC. For Woodside personnel designated to serve in DTMI's Forward Operating Base (FOB), it is expected that they arrive at the FOB no later than 24 hours from the formal request being made by the SMPC.

Area	Role	Woodside personnel[5]	Key Duties	#
DTMI Maritime Environmental Emergency Coordination Centre (MEECC)	CMT Liaison Officer	CIMT Liaison	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CIMT Leader and SMPC. • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DTMI IMT Incident Control	Deputy Incident Controller	Deputy Incident Commander (Deputy IC)	• Provide a direct liaison between the PT IMT and DTMI IMT. • Facilitate effective communications and coordination between the PT IC and the DTMI IC. • Offer advice to the DTMI IC on matters pertaining to PT incident response policies and procedures. • Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DTMI IMT.	1
DTMI IMT Intelligence	Deputy Intelligence Officer	Situation Unit Leader (Intelligence)	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DTMI IMT to the PT IMT. • Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DTMI IMT to the PT IMT.	1
DTMI IMT Intelligence – Environment	Environment Support Officer	Deputy Environment Unit Leader	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. • Assist in the interpretation of the PT OPEP and relevant TRP plans.	1

[5] *These positions would be mobilised, in consultation with DTMI, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through internal resourcing and mutual Aid agreements such as the AMOSC Core Group via [12].*

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Area	Role	Woodside personnel[5]	Key Duties	#
			• Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. • Facilitate the provision of relevant environmental information and advice originating from the DTMI IMT to the PT IMT.	
DTMI IMT Planning-Plans/ Resources	Deputy Planning Officer	Deputy Planning Section Chief	• As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. • Facilitate the provision of relevant IAP and sub plans from the PT IMT. • Assist in the interpretation of the PT OPEP from the PT. • Assist in the interpretation of the PT IAP and sub plans from the PT IMT. • Facilitate the provision of relevant IAP and sub plans originating from the DTMI IMT to the PT IMT. • Assist in the interpretation of the PT existing resource plans. • Facilitate the provision of relevant components of the resource sub plan originating from the DTMI IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	1
DTMI IMT Public Information-Media/ Community Engagement	Deputy Public Information Officer	Deputy Public Information Officer	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DTMI IMT Media team. • Facilitate effective communications and coordination between the PT and DTMI media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DTMI Information and Warnings team. • Offer advice to the DTMI Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DTMI Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DTMI Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	1
DTMI IMT Logistics	Deputy Logistic Officer	Deputy Logistics Section Chief	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. • Collects Request Forms from DTMI to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1

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Area	Role	Woodside personnel[5]	Key Duties	#
DTMI IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Officer	Deputy Finance Section Chief	• As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. • Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response. • Assist the Finance Officer in the tracking of financial commitments through the response, including the supply contracts commissioned directly by DTMI and to be charged back to the PT.	1
DTMI IMT Operations	Deputy Operations Officer	Deputy Operations Section Chief	• As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. • Facilitate effective communications and coordination between the PT Operations Section and the DTMI Operations Section. • Offer advice to the DTMI Operations Officer on matters pertaining to PT incident response procedures and requirements. • Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DTMI response efforts.	1
DTMI IMT Operations – Waste Management	Deputy Waste Management Coordinator	Deputy Waste Coordinator (Materials)	• As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. • Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. • Collects Request Forms from DTMI to action via PT IMT.	1
DTMI FOB Operations Command	Deputy Division Commander	FOB Deputy Incident Commander	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DTMI FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DTMI Division Commander. • Offer advice to the DTMI Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. • Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	1
			Total	11

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APPENDIX G – DTMI LIAISON OFFICER RESOURCES TO WOODSIDE

Once DTMI activates a State waters/ shorelines IMT, DTMI will make available the following roles to Woodside.

Area	DTMI Liaison Role	Personnel Sourced from:	Key Duties	#
Woodside CIMT	DTMI Liaison Officer (prior to DTMI assuming Controlling Agency)/ Deputy Incident Controller – State waters (after DTMI assumes Controlling Agency)	DTMI	• Facilitate effective communications between DTMI's SMPC/ Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DTMI of the incident and the potential impact on State waters. • Assist in the provision of support from DTMI to the Petroleum Titleholder. • Facilitate the provision technical advice from DTMI to the Petroleum Titleholder Incident Controller as required.	1
Woodside CIMT Public Information – Media	DTMI Media Liaison Officer	DTMI	• Provide a direct liaison between the PT Media team and DTMI IMT Media team. • Facilitate effective communications and coordination between the PT and DTMI media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DTMI Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DTMI and wider Government media policies and procedures.	1
			Total DTMI Personnel Initial Requirement to Woodside	2

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APPENDIX I DEPARTMENT OF PLANNING LAND, HERITAGE AND ABORIGINAL ENQUIRY SYSTEM RESULTS

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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Search Criteria

56 Aboriginal Cultural Heritage (ACH) Register in Shapefile - AU_ENVT_WEL_EP_EMBA_GWA_Ops_Cwth_2025_v3. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the *Aboriginal Heritage Act 1972*.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you provide the details to the Department via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form and we will make every effort to rectify it as soon as possible.

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Terminology

ID: ACH on the Register is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- **Boundary Reliable (Yes/No):** Indicates whether to the best knowledge of the Department, the location and extent of the ACH boundary is considered reliable.
- **Boundary Restricted = No:** Represents the actual location of the ACH as understood by the Department..
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the ACH is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Culturally Sensitive = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
- **Culturally Sensitive = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the ACH is restricted if it is considered culturally sensitive information. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the people who provided the information. To request access please contact via https://achknowledge.dplh.wa.gov.au/ach-enquiry-form.
- **Culturally Sensitive Nature:**
  - **No Gender / Initiation Restrictions:** *Anyone* can view the information.
  - **Men only:** Only *males* can view restricted information.
  - **Women only:** Only *females* can view restricted information.

Status:

- **Register:** Aboriginal cultural heritage places that are assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*.
- **Lodged:** Information which has been received in relation to an Aboriginal cultural heritage place, but is yet to be assessed under Section 5 of the *Aboriginal Heritage Act 1972.*
- **Historic:** Aboriginal heritage places assessed as not meeting the criteria of Section 5 of the *Aboriginal Heritage Act 1972*. Includes places that no longer exist as a result of land use activities with existing approvals.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Coordinates

Map coordinates are based on the GDA 2020 Datum.

Basemap Copyright

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
159	CORAL BAY 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07594
564	POINT MURAT 02	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P07502
628	CAMP THIRTEEN BURIAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P07434
873	MONTEBELLO IS: NOALA CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07287
926	MONTEBELLO IS: HAYNES CAVE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Midden; Rock Shelter	*Registered Knowledge Holder names available from DPLH	P07286
6596	POINT ANDERSON.	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Hunting Place; Midden; Shell; Water Source	*Registered Knowledge Holder names available from DPLH	P06341
6616	CORAL BAY ACCESS 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06361
6723	MULANDA 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06257
6724	MULANDA 3	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06258
6725	MULANDA 4	No	No	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	P06259
6754	OSPREY BAY 6	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06165
6755	OSPREY BAY INTERDUNAL 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06166
6756	OSPREY BAY INTERDUNAL 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden	*Registered Knowledge Holder names available from DPLH	P06167
6757	BLOODWOOD CREEK MIDDEN 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06168
6758	BLOODWOOD CREEK MIDDEN 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06169
6759	BLOODWOOD CREEK MIDDEN 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06170
6760	BLOODWOOD CREEK SHORELINE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06171

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
6761	LOW POINT MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06172
6762	MILYERING MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06173
6769	MULANDA 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06180
6782	28 MILE CREEK NORTH 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06140
6784	MANDU MANDU CREEK SOUTH	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06142
6785	MANDU MANDU CREEK NORTH	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06143
6790	YARDIE CREEK SOUTH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06148
6792	MULANDA BLUFF MIDDEN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06150
6798	YARDIE INTERDUNAL SWALE	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06156
6799	YARDIE BEACH MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06157
6800	OYSTER STACKS MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06158
6801	NORTH T-BONE BAY	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06159
6802	OSPREY BAY 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06160
6803	OSPREY BAY 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06161
6804	OSPREY BAY 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06162
6805	OSPREY BAY 4	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06163
6806	OSPREY BAY 5	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P06164

Aboriginal Cultural Heritage Inquiry System

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
6827	CORAL BAY SKELETON	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P06132
7123	BERNIER ISLAND	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P05789
7126	MESA CAMP	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05792
7203	BAUBOODJOO POINT (Bruboodjoo Midden Site)	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Hunting Place; Midden	*Registered Knowledge Holder names available from DPLH	P05707
7205	TWIN HILL FISHING PLACE.	No	No	No	No Gender / Initiation Restrictions	Register	Hunting Place	*Registered Knowledge Holder names available from DPLH	P05709
7206	WEALJUGOO MIDDEN.	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Camp; Hunting Place; Midden	*Registered Knowledge Holder names available from DPLH	P05710
7211	MAUD LANDING.	No	No	No	No Gender / Initiation Restrictions	Register	Burial; Camp; Meeting Place; Water Source	*Registered Knowledge Holder names available from DPLH	P05715
7254	SANDY BAY NORTH	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05652
7265	LAKE SIDE VIEW	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05664
7299	YARDIE CREEK	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05645
7300	MANDU MANDU CK ROCKSHELTERS	Yes	Yes	Yes	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P05646
7304	PILGRAMUNNA BAY MIDDEN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	P05650
7305	MANGROVE BAY.	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Artefacts / Scatter; Hunting Place; Midden	*Registered Knowledge Holder names available from DPLH	P05651
8300	CORAL BAY	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P04352
8301	NINGALOO STATION	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	P04353
8927	TEN MILE WELL BURIAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	P03570
10381	VLAMING HEAD	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Ritual / Ceremonial; Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	P01799

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
11458	NINGALOO (near)	No	No	No	No Gender / Initiation Restrictions	Register	Painting	*Registered Knowledge Holder names available from DPLH	P00701
11820	ENDERBY ISLAND 01	No	No	No	No Gender / Initiation Restrictions	Register	Engraving	*Registered Knowledge Holder names available from DPLH	P00364
16594	Cardabia Station	No	Yes	No	No Gender / Initiation Restrictions	Register	Midden; Shell	*Registered Knowledge Holder names available from DPLH	
16597	Baler Bluff	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Midden; Shell	*Registered Knowledge Holder names available from DPLH	
17193	Ningaloo Station	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	

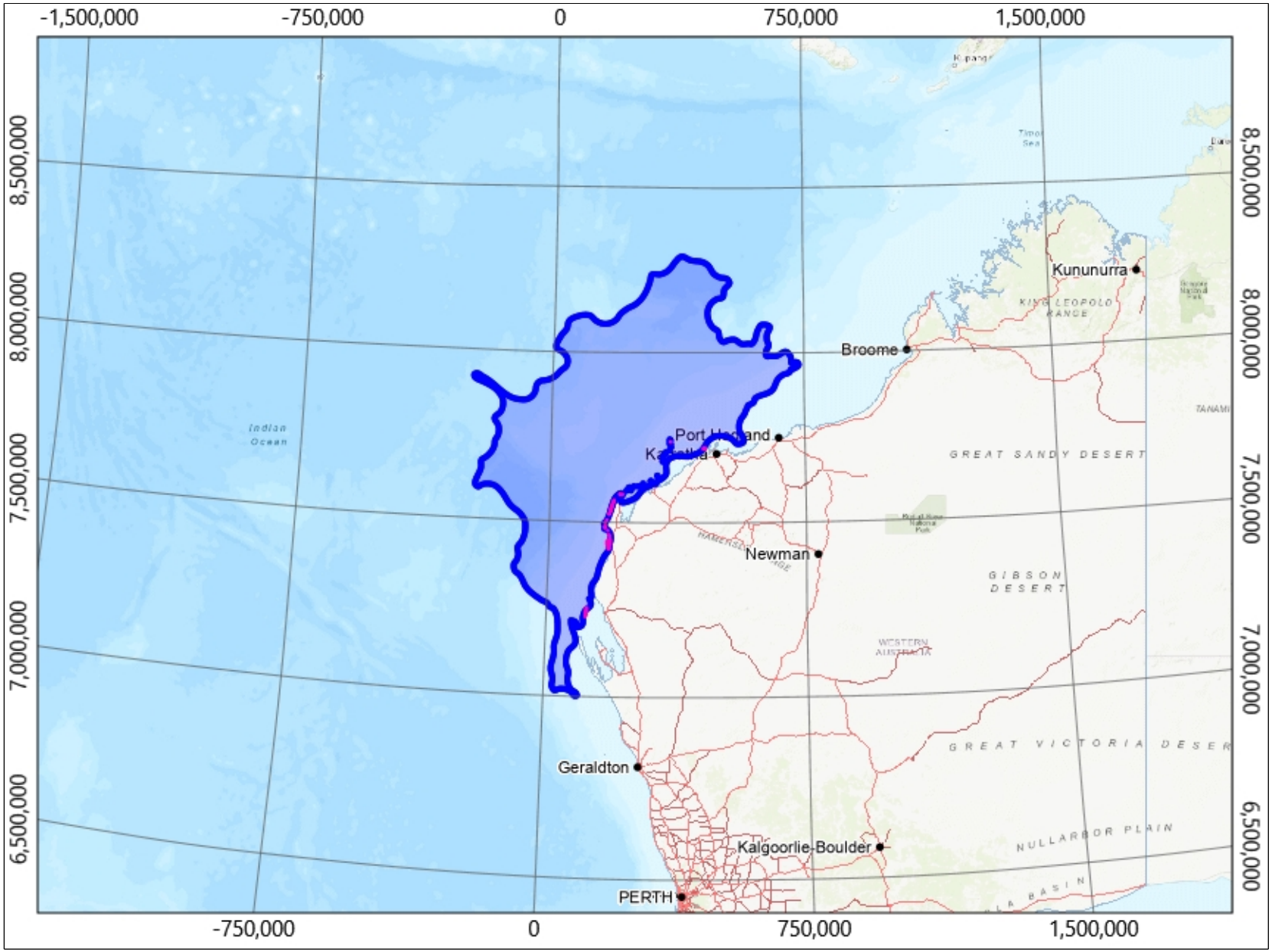
Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Register

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Legend

- Aboriginal Cultural Heritage (ACH) Register
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

602.70 kilometres

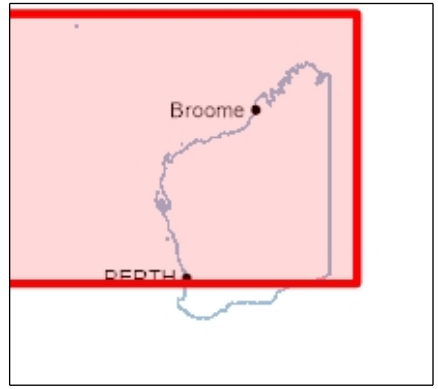
Map Scale 1 : 18,260,000

MGA Zone 50 (GDA2020)

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Lodged

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Search Criteria

58 Aboriginal Cultural Heritage (ACH) Lodged in Shapefile - AU_ENVT_WEL_EP_EMBA_GWA_Ops_Cwth_2025_v3

Disclaimer

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future. In Western Australia Aboriginal heritage is protected under the Aboriginal Heritage Act 1972.

All Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported or exists on the Register.

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Terminology

ID: ACH on the Register is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- Boundary Reliable (Yes/No): Indicates whether to the best knowledge of the Department, the location and extent of the ACH boundary is considered reliable.
- Boundary Restricted = No: Represents the actual location of the ACH as understood by the Department..
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- Culturally Sensitive = No: Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
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- Culturally Sensitive Nature:
  - No Gender / Initiation Restrictions: Anyone can view the information.
  - Men only: Only males can view restricted information.
  - Women only: Only females can view restricted information.

Status:

- Register: Aboriginal cultural heritage places that are assessed as meeting Section 5 of the Aboriginal Heritage Act 1972.
- Lodged: Information which has been received in relation to an Aboriginal cultural heritage place, but is yet to be assessed under Section 5 of the Aboriginal Heritage Act 1972.
- Historic: Aboriginal heritage places assessed as not meeting the criteria of Section 5 of the Aboriginal Heritage Act 1972. Includes places that no longer exist as a result of land use activities with existing approvals.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Coordinates

Map coordinates are based on the GDA 2020 Datum.

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Lodged

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
883	BARROW ISLAND 01	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
884	I-24-S0001/S0002	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
885	BARROW ISLAND 03	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
886	C-21-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
887	O-02-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
888	P-05-S0001	No	No	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
889	O-06-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
890	D-20-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
891	Bandicoot Bay Settlement	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
892	BARROW ISLAND 10	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
893	D-20-S0002	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
894	D-16-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
6115	EXMOUTH NORTH-EAST	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Burial	*Registered Knowledge Holder names available from DPLH	
6312	EXMOUTH NORTH-EAST	No	No	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
6783	28 MILE CREEK NORTH 2	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
6786	LAKESIDE COASTAL PLAIN	No	No	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
6789	TURQUOISE BAY NORTH	No	No	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Lodged

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
7204	CHABJUWARDOO BAY.	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Hunting Place	*Registered Knowledge Holder names available from DPLH	
7208	MILYERING ROCKS.	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Hunting Place	*Registered Knowledge Holder names available from DPLH	
7212	GREYLING CLIFFS.	No	No	No	No Gender / Initiation Restrictions	Lodged	Hunting Place	*Registered Knowledge Holder names available from DPLH	
10099	POINT MAUD, CORAL BAY	No	No	No	No Gender / Initiation Restrictions	Lodged	Burial	*Registered Knowledge Holder names available from DPLH	
10100	GNARALOO BAY	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Burial	*Registered Knowledge Holder names available from DPLH	
10595	CORAL BAY BURIAL	No	No	No	No Gender / Initiation Restrictions	Lodged	Burial	*Registered Knowledge Holder names available from DPLH	
11801	COASTAL MIDDEN, 5 MILE	No	No	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
19838	Midden Site at Exmouth River mouth	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	
21439	Cardabia Station Waterhole	No	No	No	No Gender / Initiation Restrictions	Lodged	Water Source	*Registered Knowledge Holder names available from DPLH	
21468	Sandy Point Rockshelter	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Sub surface cultural material; Traditional Structure; Rock Shelter; Shell	*Registered Knowledge Holder names available from DPLH	
22943	Flacourt Bay 01	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Rock Shelter	*Registered Knowledge Holder names available from DPLH	
29549	Boodie Soak	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
31762	Site 1	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
31763	Site 2	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
36199	Boodie Cave		Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36200	John Wayne Country Rockshelter	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36234	South End structures, Barrow Island.	No	No	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Lodged

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
36261	G-13-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36262	H-24-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36263	H-24-S0002	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36264	I-23-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36265	I-23-S0002	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36266	I-24-S0003	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36267	J-23-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36268	J-23-S0002	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36269	J-23-S0003	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36270	M-03-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36271	N-02-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36272	O-02-S0002	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36273	O-05-S0003	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36344	N-05-S0002	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36345	N-05-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36346	O-05-S0001	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36347	O-05-S0002	No	Yes	No	No Gender / Initiation Restrictions	Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	

Aboriginal Cultural Heritage Inquiry System

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
36348	P-04-S0001	No	Yes	No		Lodged	Historical; Other	*Registered Knowledge Holder names available from DPLH	
36718	Skeleton Bay Burial Sites	Yes	Yes	Yes	No Gender / Initiation Restrictions	Lodged	Burial; Ritual / Ceremonial; Other; Repository / Storage Place	*Registered Knowledge Holder names available from DPLH	
38844	Warroora burial site.	No	Yes	No		Lodged	Burial; Artefacts / Scatter; Ochre	*Registered Knowledge Holder names available from DPLH	
39730	Tantabiddi Midden 1	No	Yes	No	No Gender / Initiation Restrictions	Lodged		*Registered Knowledge Holder names available from DPLH	
40768	Jurabi Point	Yes		Yes	No Gender / Initiation Restrictions	Lodged	Burial	*Registered Knowledge Holder names available from DPLH	
41467	Yalabaya Scatter 6	No	Yes	No		Lodged	Artefacts / Scatter; Midden; Shell	*Registered Knowledge Holder names available from DPLH	
41468	Yalabaya Scatter 2	No	Yes	No		Lodged	Burial; Artefacts / Scatter; Midden	*Registered Knowledge Holder names available from DPLH	

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aboriginal Cultural Heritage Inquiry System

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Legend

- Aboriginal Cultural Heritage (ACH) Lodged
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

602.70 kilometres

Map Scale 1 : 18,260,000

MGA Zone 50 (GDA2020)

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